

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. CONTRACT ID CODE		PAGE OF PAGES 1   3	
2. AMENDMENT/MODIFICATION NO. 0003		3. EFFECTIVE DATE 05-Apr-2002		4. REQUISITION/PURCHASE REQ. NO. W68MD9-1208-9973		5. PROJECT NO.(If applicable)	
6. ISSUED BY USA ENGINEER DISTRICT, SEATTLE ATTN: CENWS-CT P.O. BOX 3755 SEATTLE WA 98124-3755		CODE DACA67		7. ADMINISTERED BY (If other than item 6)  <b>See Item 6</b>		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. DACA67-02-R-0202	
				X		9B. DATED (SEE ITEM 11) 08-Feb-2002	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.  Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A.THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B.THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C.THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D.OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Design Build: Vehicle Maintenance Facilities Fort Lewis, WA SEE ATTACHED  Address technical questions to: techbid@nws02@usace.army.mil.							
<small>Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.</small>							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
15B. CONTRACTOR/OFFEROR  _____ (Signature of person authorized to sign)		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA  BY _____ (Signature of Contracting Officer)		16C. DATE SIGNED  05-Apr-2002	

## SECTION SF 30 BLOCK 14 CONTINUATION PAGE

This amendment number 3 is issued to revise the solicitation as follows:

A. The Contract Requirements are revised as follows:

1. The RFP page that appears before the Table of Contents, which starts out “This Procurement is Open to both Large and Small Business” is revised by pen-and-ink change to correct the email address for technical questions to delete the dot between the “nws” and the “02.” The correct email address is: [techbid@nws02.usace.army.mil](mailto:techbid@nws02.usace.army.mil).
2. Section 00010, is revised as follows:
  - a) Standard Form 1442, BACK, page 00010-2, Block 17, is revised to reflect the number of pages that make up the pricing schedule.
  - b) The Schedule is revised to change the line items.
  - c) Section 00100-INTRO, is revised as follows:
    - i. Paragraph 4.5.1, Project Schedule, is revised to delete the reference to Section 00820, paragraph 1.3.1.3, and to state “paragraph 1.3 Phase II Requirements.”
3. Section 00800 – Special Clauses is revised to Add SC-4 and SC-13, and revise SC-1.1.
4. Section 00810 – Design Build Contract Procedures is revised to to correct design submittal requirements.
5. Section 00860 – Statement of Work
  - a) Part I contains a revision to Paragraph 1.1.1.
  - b) Part II contains miscellaneous revisions.
6. Section 00890 – Outline Specifications contains miscellaneous revisions.
7. Davis Bacon General Wage Decisions have been modified. The following updated versions are included:
  - a) WA020001 with 3 amendments dated 03/29/2002.
  - b) WA020002 with 4 amendments dated 04/05/2002.

B. The Technical Specifications have been revised as follows:

1. The Table of Contents has been changed to reflect changes in the Technical Specifications
2. Section 15910 – Direct Digital Control Systems has been added.
3. Appendix B has been revised to include notations of revisions to drawing sheets C-2, C-7, C-8, A-8 and A-9.

C. Changes to plans are as follows:

1. Drawing sheets GT-11, A-2, E-1, E-2, E-3, E-4, E-5, E-6, E-10, E-11 and E-12 have been revised.
  2. Drawing sheets E-7, E-8 and E-9 have been deleted.
- D. The time and date for receipt of proposals remain unchanged at 3:00 p.m., local time, on 12 April 2002
- E. Offerors must acknowledge receipt of this amendment by number and date on the SF1442 BACK in block 19.

Enclosures:

Rev. SF1442 (back)

Rev. Pages 00010-5 thru 00010-8 - Bid Schedule

Rev. Section 00100- Intro – Instructions Conditions and Notices to Firms

Rev. Section 00800 – Special Clauses

Rev. Section 00810 – Design Build Contract Procedures

Rev. Section 00860 – Statement of Work Part One

Rev. Section 00860 – Statement of Work Part Two (includes attachments)

Rev. Section 00890 - Outline Specifications

Modified General Wage Decisions WA020001 and WA020002

Added Section 15910 – Direct Digital Control Systems

Rev. Appendix B

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## OFFER (Must be fully completed by offeror)

14. NAME AND ADDRESS OF OFFEROR (Include ZIP Code)		15. TELEPHONE NUMBER (Include area code) Fax No.:	
Tax ID No: DUNS No:		16. REMITTANCE ADDRESS (Include only if different than Item 14)	
eMail:			
CODE	FACILITY CODE		

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this accepted by the Government in writing within \_\_\_\_\_ calendar days after the date offers are due. (Insert any number equal or greater than minimum requirement stated in 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)

AMOUNTS



See Pages 00010-5 thru 00010-8

18. The offeror agrees to furnish any required performance and payment bonds.

## 19. ACKNOWLEDGEMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation - give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)

20B. SIGNATURE

20C. OFFER DATE

## AWARD (To be completed by Government)

21. ITEMS ACCEPTED

22. AMOUNT

23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN  
(4 copies unless otherwise specified)



ITEM

26

25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO

☐

10 U.S.C. 2304(c) ( )

☐

41 U.S.C. 253(c) ( )

26. ADMINISTERED BY

CODE

United States Army Corps of Engineers, Seattle District  
Northwest Area Office  
PO Box 92146  
Tillicum, WA 98492-0146

27. PAYMENT WILL BE MADE BY

US Army Corps of Engineers Finance Center  
CEFC-AO-P  
5722 Integrity Drive  
Millington, TN 38054-5005

## CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT (Contractor is required to sign

document and return \_\_\_\_\_ copies to the issuing office.)  
Contractor agrees to furnish and deliver all items or perform all work requirements identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications incorporated by reference in or attached to this

☒ 29. AWARD. (Contractor is not required to sign this document.)

offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN  
(Type or print)

31A. NAME OF CONTRACTING OFFICER (Type or print)

30B. SIGNATURE

30C. DATE

31B. UNITED STATES OF AMERICA

31C. AWARD DATE

BY

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01003/RL  
54068 & 54113  
FY02 Vehicle Maintenance Facility, Fort Lewis

SCHEDULE

FY02 VEHICLE MAINTENANCE FACILITY  
FT LEWIS, WASHINGTON  
PN: 54068 & 54113

<u>Item</u> <u>No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Price</u>	<u>Amount</u>
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**BASE ITEMS**

0001	Provide all labor, professional services, materials, equipment and transportation necessary for the complete design (including professional oversight services during construction), of FY02 Vehicle Maintenance Facility at Fort Lewis, Washington, as described herein and as further required to provide for development in accordance with the Contractor's proposed design and construction schedule, except for Optional Items 0006 through 0008	1	JOB	L.S.	\$
<u>0001A</u> <u>A</u>	<u>Provide all labor, professional services, materials, equipment and transportation necessary for the complete design for FY02 Vehicle Maintenance Facility PN 54068 which includes the MARC, RSTA, and Engineering Company</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$</u>
<u>0001BB</u>	<u>Provide all labor, professional services, materials, equipment and transportation necessary for the complete design for FY02 Vehicle Maintenance Facility PN 54113 which includes the CSSC and Infantry BN</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$</u>

01003/RL  
54068 & 54113  
FY02 Vehicle Maintenance Facility, Fort Lewis

<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
0002	Provide all labor, material, equipment, and transportation necessary for the complete construction and equipping of FY02 Vehicle Maintenance Facility at Fort Lewis, Washington, including all related site work, utility work, and assembly and installation of Government furnished items, as described herein and as further required to provide for development in accordance with the Contractor's proposed design and construction schedule, except for Base Items 0003 through 0005 and Optional Items 0006 through 0008	1	JOB	L.S.	\$
<u>0002A</u> <u>A</u>	<u>FY02 Vehicle Maintenance Facility PN 54068 which includes the MARC, RSTA, and Engineering Company</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$</u>
<u>0002BB</u>	<u>FY02 Vehicle Maintenance Facility PN 54113 which includes the CSSC and Infantry BN</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$</u>
0003	All Work for As-Built Drawings in Electronic Format as Specified, from Preparation to Final Submittal, for base bid and any option exercised	1	JOB	L.S.	\$25,000
<u>0003A</u> <u>A</u>	<u>All Work for As-Built Drawings in Electronic Format for FY02 Vehicle Maintenance Facility PN 54068 which includes the MARC, RSTA, and Engineering Company</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$12,500</u>
<u>0003BB</u>	<u>All Work for As-Built Drawings in Electronic Format for FY02 Vehicle Maintenance Facility PN 54113 which includes the CSSC and Infantry BN</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$12,500</u>
0004	All Work for O&M Manuals, as Specified, from Preparation to Final Submittal, for base bid and any option exercised	1	JOB	L.S.	\$60,000
<u>0004A</u> <u>A</u>	<u>All Work for O&amp;M Manuals for FY02 Vehicle Maintenance Facility PN 54068 which includes the MARC, RSTA, and Engineering Company</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$30,000</u>



01003/RL  
54068 & 54113  
FY02 Vehicle Maintenance Facility, Fort Lewis

<u>Item No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<u>0004BB</u>	<u>All Work for O&amp;M Manuals for FY02 Vehicle Maintenance Facility PN 54113 which includes the CSSC and Infantry BN</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$30,000</u>
0005	All Work for 1354 Data/ Installed Equipment List, as Specified, from Preparation to Final Submittal, for base bid and any option exercised	1	JOB	L.S.	\$12,000
<u>0005A</u> <u>A</u>	<u>All Work for 1354 Data/ Installed Equipment List for FY02 Vehicle Maintenance Facility PN 54068 which includes the MARC, RSTA, and Engineering Company</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$6,000</u>
<u>0005BB</u>	<u>All Work for 1354 Data/ Installed Equipment List for FY02 Vehicle Maintenance Facility PN 54113 which includes the CSSC and Infantry BN</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$6,000</u>

**TOTAL BASE ITEMS**

\$ \_\_\_\_\_

**OPTIONAL ITEMS**

0006	Provide all labor, professional services, materials, equipment and transportation necessary for the complete design (including professional oversight services during construction) and construction of Sig Co.facility, as specified herein.	1	JOB	L.S.	\$ _____
0007	Provide all labor, professional services, materials, equipment and transportation necessary for the complete design (including professional oversight services during construction) and construction of MI Co. facility, as specified herein.	1	JOB	L.S.	\$ _____
<del>0008</del>	<del>Provide all labor, professional services, materials, and equipment for all interior and exterior communication cables (telephone and fiber optic) including cable termination and testing, in lieu of the work specified to be provided by the Government (see Section 00860,</del>	<del>1</del>	<del>JOB</del>	<del>L.S.</del>	<del>\$ _____</del>

01003/RL  
 54068 & 54113  
 FY02 Vehicle Maintenance Facility, Fort Lewis

Item No.	Description of Item	Quantity	Unit	Unit Price	Amount
	<del>paragraph 3.5.7), to provide a complete and usable communication system</del>				
0008	<u>Provide all labor, professional services, materials, and equipment for MI Company vehicle parking for 32 vehicles</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$ _____</u>
0009	<u>Provide all labor, professional services, materials, and equipment for fifth bay at the RSTA Deployment Equipment Storage Building</u>	<u>1</u>	<u>JOB</u>	<u>L.S.</u>	<u>\$ _____</u>
<b>TOTAL OPTIONAL ITEMS</b>				<b>\$</b>	<b>_____</b>
<b>TOTAL BASE AND OPTIONAL ITEMS</b>				<b>\$</b>	<b>_____</b>

**NOTE: 1. The offeror shall not revise the dollar amounts established for Items 0003, 0004 and 0005.**

**2. No partial or total payment will be made for Items 0003, 0004 and 0005, until the as-built drawings, the O&M Manuals, and the 1354 Data/ Installed Equipment List are fully approved (A or B action).**

**ATTENTION:**

**TOTAL AMOUNT OF FUNDS AVAILABLE FOR DESIGN AND CONSTRUCTION IS \$16,922,000. THE GOVERNMENT MAY CHOOSE TO EXCEED THIS AMOUNT.**

## **SECTION 00100 INSTRUCTIONS, CONDITIONS, AND NOTICES TO FIRMS**

### **1. INTRODUCTION**

The U.S. Army Corps of Engineers, Seattle District, is conducting a two-phase procurement for Request for Proposals (RFP) No. DACA67-02-R-0202 entitled "Design-Build: Vehicle Maintenance Facilities, Fort Lewis, WA." This solicitation will be conducted in accordance with procedures outlined in Federal Acquisition Regulations (FAR) Part 36.3 entitled "Two-Phase Design-Build Selection Procedures." There will be a Phase One (Pre-qualification) and a Phase Two (submission of technical and price proposals). However, there will not be separate packages issued on the Seattle District's web site for the two phases. **This RFP package contains ALL OF THE INFORMATION AND SUBMISSION REQUIREMENTS FOR BOTH PHASES, AS WELL AS ALL OF THE SPECIFICATIONS AND DRAWINGS.** Those firms that wish to be considered for pre-qualification may provide submittals in accordance with this section of the solicitation. The submittals will be evaluated and the Contracting Officer will select up to **five** of the most highly qualified offerors based on demonstrated experience, qualifications, past performance, and organizational approach. Phase Two will require the pre-qualified firms to submit technical and price proposals, which will be evaluated in accordance with FAR Part 15 and this section of the solicitation. One firm-fixed price contract will be awarded as a result of the Phase-Two evaluation. The successful design-build contractor shall design and construct a new Vehicle Maintenance Facility at North Fort Lewis, WA.

### **PHASE ONE – PRE-QUALIFICATION**

**1. PRE-QUALIFICATION PHASE EVALUATION CRITERIA:** Offerors will be evaluated for the following criteria, listed in descending order of importance:

#### **1. Experience**

- 1.a Experience of the firms proposed for the design-build team with similar projects (e.g., vehicle maintenance projects, projects on military installations)
- 1.b Experience of the firms proposed for the design-build team with other types of military and civilian design-build projects
- 1.c Experience of the design-build team proposed for this project working together, either as firms or individuals, on projects (design-build or non-design-build)
- 1.d Experience of telecommunications subcontractor

#### **2. Qualifications** of proposed team members (e.g., education, experience, professional registration, etc.)

- 2.a Qualifications of team members other than telecommunications subcontractor
- 2.b Qualifications of telecommunications subcontractor

#### **3. Past performance**, including customer satisfaction, quality, & timely performance

#### **4. Organizational structure and functional relationships** of the team proposed for this project, including the lines of communication and authority, and individual roles and responsibilities

**2. RELATIVE IMPORTANCE DEFINITIONS:** For Phase One, the following term will be used to establish the relative importance of the criteria and sub-criteria:

- **Significantly More Important:** The criterion is three times more important in value than another criterion.
- **More Important:** The criterion is two and one half times more important in value than another criterion.
- **Slightly More Important:** The criterion is two times more important in value than another criterion.

**3. SUMMARY OF ORDER OF IMPORTANCE:** A summary of the order of importance for the Phase-One criteria is as follows:

- Criterion 1 is more important than criterion 2.
- Criterion 2 is significantly more important than criterion 3.
- Criterion 3 is slightly more important than criterion 4.
- Sub-criterion 1.a is slightly more important than sub-criterion 1.b.
- Sub-criterion 1.b is slightly more important than sub-criterion 1.c.
- Sub-criterion 2.a is slightly more important than sub-criterion 2.b.

#### **4. TECHNICAL MERIT RATINGS:**

- **Outstanding** - Information submitted demonstrates a superior level of experience, qualifications, past performance or organizational approach.
- **Above Average** - Information submitted demonstrates a very good level of experience, qualifications, past performance or organizational approach.
- **Satisfactory** - Information submitted demonstrates an adequate level of experience, qualifications, past performance or organizational approach.
- **Marginal** - Information submitted demonstrates a limited level of experience, qualifications, past performance or organizational approach.
- **Unsatisfactory** - Information submitted demonstrates an unacceptable level of experience, qualifications, past performance or organizational approach.

#### **5. Submittal Requirements for Phase One (Pre-qualification):**

##### **5.1 General Submittal Requirements for Phase One (Pre-Qualification).**

Offerors must **submit information** for the above criteria **in sufficient detail to permit proper evaluation**. Submittals must be in a format that follows the sequence of criteria set forth in the paragraphs above. Absence of information will be deemed as if no support for that criteria is available. Submittals should be on 8½ x 11-inch paper, to the maximum extent practicable, and submitted in standard letter-size, loose-leaf binders. Contents of binders should be tabbed and labeled with a Table of Contents for easy identification, **with all pages numbered sequentially**. No material should be incorporated by reference. Any such material will not be considered for evaluation.

**Submittals are not to exceed a total of 120 pages.** Photographs and organizational charts will not be considered a page. However, a photograph with more than 6 lines of text (for caption purposes) counts as one page. Double-sided pages count as two pages. Excessive proposals may be construed as an indication of the offeror's lack of cost-consciousness and risk not being evaluated.

## **5.2 Specific Submittal Requirements for Phase One (Pre-Qualification)**

**5.2.1 Experience of the firms proposed for the design-build team with similar projects** (e.g., vehicle maintenance projects, projects on military installations). The greater the relevance and recency of prior project experience, the higher the rating assigned during evaluations. Design-build projects will be considered more relevant than non-design-build projects. **NOTE: A DESIGN-BUILD PROJECT** is defined as a project where the successful contractor is responsible for the design and construction of a complete and usable facility within the requirements of the RFP.

a. Provide a list of specific projects including projects for **both** the construction and the design firms that are either currently under construction or were completed within the last five (5) years. List no more than a total of 10 projects for this criterion. Start with the most recent and relevant projects and work backwards in time.

b. Using a format similar to that shown below, provide specific information on the projects listed for **both** the construction and the design firms.

### ***Specialized Experience***

Project Title & Location
Project Type (e.g., design-build (DB), design (D), construction (C))
Dollar Value (design \$; construction \$)
Start & Completion Dates (Month/Year)
Role of Firm(s) (e.g., prime, sub) (address type of work performed and percentage of work, as applicable)
Brief Description of Project (address how this relates to solicitation project)
Customer Point of Contact (i.e., name, relationship to project, agency/firm affiliation, city, state, current phone no.)
Awards or recognition received (if applicable)

**5.2.2 Experience of the firms proposed for the design-build team with other types of military and civilian design-build projects.** The greater the relevance and recency of prior project experience, the higher the rating assigned during evaluations.

a. Provide a list of specific projects including projects for **both** the construction and the design firms that were completed within the last 10 years. List no more than a total of 10 projects for this criterion. Start with the most recent and relevant projects and work backwards in time.

b. Using a format similar to that shown above for “experience with similar projects,” provide specific information on projects listed for **both** construction and design firms.

**5.2.3 Experience of the design-build team proposed for this project working together, either as firms or individuals, on projects (design-build or non-design-build).** The greater the relevance and recency of prior project experience, the higher the rating assigned during evaluations. Design-build experience together will be considered more relevant than non-design-build experience working together.

a. Provide a narrative describing the team’s experience working together on design-build projects. This narrative should not exceed three (3) pages.

b. Using the format similar to that shown above for “experience with similar projects,” provide specific information on no more than five (5) design-build projects and, if applicable, (5) non-design-build projects, either currently under construction or completed within the last 10 years, on which the team members (firms and/or individuals) have worked together as a team. Start with the most recent and relevant projects and work backwards in time.

c. Provide an **OVERALL SUMMARY MATRIX (GRAPH)** that is structured to show projects on which the team members have worked together.

**5.2.4 Experience of the telecommunications subcontractor.** All telecommunications work shall be performed by certified telecommunications subcontractors and installers. Telecommunications apprentices, if used, shall be closely supervised. No more than two (2) apprentices per journeyman installer shall be permitted in performing the work. All telecommunications equipment shall be furnished and installed by a Washington State Department of Labor and Industries certified, licensed electrical telecommunications (Electrical Contractor TELECOM Contractor). The subcontractor shall have a minimum of 4 years of experience in the application, installation, and testing of specified systems and equipment shown in this RFP. Specific knowledge of the Army I3A telecommunications guide, EIA/TIA standards, and Fort Lewis telecommunications system is preferable. Subcontractor shall be a certified installer on telecommunications infrastructure components and show proof thereof.

a. Submit a brief (1-3 pages) narrative description of the proposed telecommunications subcontractor describing the firm’s recent experience.

b. Consideration will be given to the relevance, quality and depth of experience demonstrated. The greater relevance, quality, depth of experience of the telecommunications subcontractor, the higher the rating assigned.

### 5.2.5 Qualifications of proposed team members (e.g., education, experience, professional registration, etc.).

**5.2.5.1 Qualifications of team members other than telecommunications subcontractor.** The more recent and the greater the relevancy of the team members' qualifications and prior project experience, the higher the value assigned for this criterion during evaluations. In addition, qualifications of key personnel that demonstrate experience and training in sustainable design will be considered favorably. **NOTE: SUSTAINABLE DESIGN** is using an integrated design approach and emphasizing environmental stewardship, especially energy and water conservation and efficiency, use of recovered and recycled materials; waste reduction; reduction or elimination of toxic and harmful substances in facilities construction and operation; efficiency in resource and materials utilization; and development of healthy, safe and productive work environments.

a. Provide the qualifications of the KEY individual team members (**both** construction and design) proposed for this project in the form of resumes. As a minimum, provide resumes for Construction Firm's Project Manager, Design Firm's Project Manager (if applicable), Architect of Record, Contractor Quality Control Systems Manager for Construction, Project On-site Superintendent, Lead Design Engineers (specifically, Mechanical, Electrical, Civil, Structural), and Safety Officer.

b. Resumes should be no more than three (3) pages per individual and submitted in a format similar to the one shown below.

#### ***Personnel Qualifications/Experience***

Name/Title
Proposed Duties/Functions (for this project)
Firm Affiliation/Years Affiliated
Years of Experience (performing duties/functions as proposed for this project)
Education (Degree, Year, Specialization)
Active Registrations (and/or Professional/Technical Licenses/Certifications)
Specific Qualifications (for this project, if any)
List of Relevant Projects Including:
Project Title & Location
Project Type (e.g., design-build (DB), design (D), construction (C))
Dollar Value (design \$; construction \$)
Start & Completion Dates (Month/Year)
Duties/Functions (address how this relates to role for solicitation project)
Brief Description of Project (address how this relates to solicitation project)
Customer Point of Contact (i.e., name, relationship to project, agency/firm affiliation, city, state, current phone no.)
Awards or recognition received (if applicable)

c. It is expected that the team presented in Phase One will be exactly the same as proposed in Phase Two. If any change is provided in the Phase Two proposal, the offeror shall demonstrate how any new individuals or firms are as qualified for this project as those submitted with the Pre-qualification phase of this procurement.

#### **5.2.5.2 Qualifications of telecommunications subcontractor.**

a. **Minimum Qualifications of Key Telecommunications Positions:** Provide the proposed staff qualifications for personnel positions to perform work for this contract (i.e., qualifications a person must possess to fill each position). The subcontractor personnel must meet the minimum staff qualifications shown below.

1) Certified telecommunications administrators and installers assigned to the installation of the RFP system or any of its components shall have appropriate training and State Department of Labor and Industries certification so that they are qualified to install and test the provided products. Administrators shall have a minimum of 4 years of recent, relevant experience supervising the installation of telecommunications systems.

2) Installers assigned to the installation of this system or any of its components shall have a minimum of 3 years of recent work experience in the installation of EIA/TIA specified copper and fiber optic cable and components.

3) Work shall be supervised by a certified telecom administrator who is available to installers any time work is being performed and will review and approve all aspects of the work.

b. **Qualifications of Proposed Key Telecommunications Personnel.** Identify telecommunications installers and administrators by name. Provide resumes for your telecommunications telecom administrator (s) and installers who will perform work under the contract resulting from this solicitation. As a minimum, provide resumes for the disciplines identified above and any additional positions that are identified by your firm. Resumes should be no more than one (1) page per individual and should be in the format shown above for providing the qualifications of team members other than telecommunications personnel.

c. **Staff Substitutions:** No substitutions of telecommunication contractor staff will be allowed following contract award without the express written approval of the Government (see Section 00700, clause 52.244-4, Subcontractors and Outside Associates and Consultants (Architect-Engineer Services). Contractor requests for telecommunications subcontractor personnel substitutions shall be made in writing at least four weeks prior to scheduled telecommunications work. Substitutions will generally be discouraged.



**d. Evaluation and Rating of Qualifications of Telecommunications**

**Subcontractors:** Consideration will be given to the relevance, quality and depth of qualifications and experience required by the prime contractor for each key telecommunication position and key telecommunications personnel. The greater relevance, quality, depth of experience and the qualifications required for the telecommunications subcontractor for the key positions and proposed personnel, the higher the rating assigned.

**5.2.6 Past performance, including customer satisfaction, quality, and timely performance**

a. The Government will evaluate the relative merits of each offeror's past performance. The Government reserves the right to consider all aspects of an offeror's performance history, but will attribute more significance to work that was similar in nature, magnitude, and complexity to this project. A lack of past performance information will receive a neutral rating during evaluation. Government databases will be checked and previous customers may be contacted as references.

b. A reproducible Customer Satisfaction Survey form is provided at the end of the Phase-One portion of Section 00100. Offerors shall forward these forms to customers to be completed and returned to Seattle District Contracting Division. To be considered, the surveys must be completed by the customers and mailed, emailed, hand-delivered, or faxed directly by the customer to the Contracting Office for receipt no later than the time and date the pre-qualification submittals are due.

Surveys submitted directly by offerors may not be considered. Please ensure envelopes containing surveys submitted to this office do not contain the offeror's return address.
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**c. AS A MINIMUM, THREE (3) CUSTOMER SATISFACTION SURVEYS SHOULD BE RECEIVED FOR THE PRIME FIRM (i.e., the firm that will sign the contract). And, at least one (1) customer satisfaction survey should be received for each significant partner (e.g., design firm).**

d. Offerors shall submit a list of all customers (including current Point of Contact and phone number) that were sent Customer Satisfaction Surveys.

**5.2.7 Organizational structure and functional relationships** of the team proposed for this project, including the lines of communication and authority, and individual roles and responsibilities. Provide an organizational chart showing the functional relationships of the firms as well as linkage and functions of proposed team members. A brief narrative shall also be submitted. Ensure your chart and narrative reflect the integration of the proposed organization (including design, construction and quality

control). In addition, provide an organization chart for the telecommunications subcontractor showing the specific administrators and installers and other telecommunications workers proposed for this project. The proposed organizational structure and functional relationships will be evaluated for completeness and reasonableness and the degree to which they demonstrate the offeror's understanding of the aspects required for successfully accomplishing the work described in the solicitation.

**5.2.8 PROVIDE THE FOLLOWING ADDITIONAL INFORMATION WITH THE PRE-QUALIFICATION SUBMITTALS:**

a. An information page containing complete name, address, telephone number, fax number, e-mail address and points of contact for each firm proposed as a team member.

b. The name, point of contact, phone number, and address for the bank and the bonding company of the firm that will sign the contract. Financial capacity will be checked, but not rated.

**5.2.9 ONE ORIGINAL AND FIVE (5) COPIES OF SUBMITTALS ARE REQUIRED,** in the format specified above, to reach the Seattle District Corps of Engineers Contracting Division Office no later than 3:00 p.m., Pacific Time, on 01 March 2002. The office is located at 4735 E. Marginal Way S., Seattle, WA 98134-2385. Submittals may be mailed to:

**U.S. Army, Corps of Engineers, Seattle District  
CENWS-CT-CB-MU, ATTN: Mary Mitton  
P.O. Box 3755, Seattle WA 98124-3755  
(206) 764-6806**

**6. SELECTION OF PRE-QUALIFIED FIRMS:** Based on the assessment of the Phase-One evaluation, the Contracting Officer will select the most highly qualified offerors, but not more than five (5) firms, that will be requested in writing to submit Phase Two proposals. It is anticipated that firms will be notified as to whether or not they are pre-qualified on or about 11 March 2002 \* No public notice stating the names of the pre-qualified firms will be published.

**7. NOTIFICATION TO FIRMS NOT PRE-QUALIFIED AND DEBRIEFINGS:**

Offerors who are not pre-qualified will be notified in writing. These offerors may request debriefing by submitting a written request to the Contracting Office within three (3) days after receipt of the notice of exclusion from the pre-qualified list.

END OF PHASE ONE (PRE-QUALIFICATION)

SEE CUSTOMER SATISFACTION SURVEY ON THE FOLLOWING PAGE

**CUSTOMER SATISFACTION SURVEY (PAGE 1 OF 2)**

DACA67-02-R-0202, Design-Build: Vehicle Maintenance Facility, Fort Lewis, WA

**SECTION 1 -- TO BE COMPLETED BY THE OFFEROR AND PROVIDED TO THE CUSTOMER REFERENCE****Name of Firm Being Evaluated:** \_\_\_\_\_**Project Title & Location:** \_\_\_\_\_**Project Dollar Value (for design-build, list both design and construction amounts):** \_\_\_\_\_**Year Completed:** \_\_\_\_\_ **Project Manager:** \_\_\_\_\_**SECTION 2 -- TO BE COMPLETED BY THE CUSTOMER REFERENCE AND MAILED, HAND-DELIVERED OR FAXED DIRECTLY TO:** Forms submitted by other than the customer (i.e., by the offeror), will not be considered.

U.S. Army Corps of Engineers, Seattle District  
 Attn: CENWS-CT-CB-MU (Mary Mitton)  
 P.O. Box 3755  
 Seattle, WA 98124-3755

FAX: (206) 764-6817  
Street Address:  
 4735 E. Marginal Way S.  
 Seattle WA 98134-2385

**OVERVIEW:** The firm shown above has submitted a proposal on a Seattle District Corps of Engineers project and provided your name as a customer reference. Part of our evaluation process requires information on the firm's past performance. Your input is important to us and responses are required by \_\_\_\_\_ for inclusion in this evaluation. Your assistance is greatly appreciated.

In blocks below, please indicate your overall level of satisfaction with work performed by firm shown in Section 1. Mark *Not Applicable* (N/A) for any areas that do not apply. Provide comments on page 2.

	<b>On this project, the firm:</b>	<b>Satisfaction</b>					
		<b>Low</b>		<b>High</b>		<b>N/A</b>	
1.	Kept You Informed & Treated You as Important Member of the Team	1	2	3	4	5	N/A
2.	Displayed Flexibility in Responding to Your Needs	1	2	3	4	5	N/A
3.	Displayed Initiative in Problem Solving	1	2	3	4	5	N/A
4.	Resolved Your Concerns	1	2	3	4	5	N/A
5.	Completed Your Major Project Milestones on Time	1	2	3	4	5	N/A
6.	Managed the Project Effectively (including adequate Cost Controls)	1	2	3	4	5	N/A
7.	Managed their Work Force Effectively (including Subcontractors)	1	2	3	4	5	N/A
8.	Effectiveness of Quality Control Program	1	2	3	4	5	N/A
9.	Provided Warranty Support	1	2	3	4	5	N/A

## CUSTOMER SATISFACTION SURVEY (PAGE 2 OF 2)

DACA67-02-R-0202, Design-Build: Vehicle Maintenance Facility, Fort Lewis, WA

12.	<b>Your OVERALL Level of Customer Satisfaction</b>	1   2   3   4   5   N/A
13.	Was the project a design-build project? (A design-build project is defined as a project where the successful contractor is responsible for the design and construction of a complete and usable facility.)  (If "yes", the firm was responsible for _____% of the design.)	Yes.....No.....N/A
14.	If design-build, effectiveness of communication between design and construction.	1   2   3   4   5   N/A
15.	Was the team offered in the proposal the same team that worked on the project? (If no, please describe below.)	Yes.....No.....N/A
16.	Was payment withheld or liquidated damages assessed? (If yes, please describe below).	Yes.....No.....N/A
17.	Were any features offered in the proposal <u>not included</u> in the completed project? (If yes, please describe below.)	Yes.....No.....N/A
18.	<b>REMARKS: (Discuss strengths and weaknesses of the firm)</b>          <b>Your Name:</b> _____ <b>Phone Number:</b> _____ <b>Firm Name:</b> _____ <b>Relationship to this Project:</b> _____	

**Your assistance in providing this past performance information is appreciated.**

## **PHASE TWO – SUBMISSION OF TECHNICAL AND PRICE PROPOSALS BY PRE-QUALIFIED FIRMS**

**1. INTRODUCTION:** Each of the pre-qualified firms is invited to submit a proposal in response to Request for Proposals (RFP) No. DACA67-02-R-0202 entitled “Design Build: Vehicle Maintenance Facility, Fort Lewis, WA.” This RFP establishes project design and construction criteria and provides procedures, requirements, format, and other data to assist pre-qualified offerors in preparing their proposals. **It is the intent of the Government to make award based upon initial offers, without further discussions or additional information.** A contract will be awarded to the firm submitting the proposal that conforms to the RFP, is considered to offer the most advantageous offer in terms of the evaluation factors, including price, and is determined to be in the best interest of the Government.

### **2. EVALUATION FACTORS:**

2.1 Proposals will be evaluated on the basis of two criteria, **TECHNICAL** and **PRICE**. Award will be based upon evaluation of the following factors listed in descending order of importance:

2.2 **TECHNICAL CRITERIA:** The following technical criteria are listed in **descending order of importance**. See paragraph 2.4 below for a summary of the order of importance for these criteria.

#### **1. Project Management**

##### **1.1 Project schedule**

##### **1.2 Project management plan & organizational structure & functional relationships**

##### **1.3 Quality control plan**

#### **2. Quality of civil engineering design, methods and materials**

#### **3. Quality of architectural design development of building systems**

#### **4. Quality of structural engineering design, methods and materials**

#### **5. Quality of mechanical design, methods and materials**

#### **6. Quality of electrical design, methods and materials**

#### **7. Team Qualifications**

##### **7.1 Team qualifications from the pre-qualification phase (other than telecommunications subcontractor)**

##### **7.2 Qualifications and experience of telecommunications subcontractor**

#### **8. Sustainable Design**

#### **9. Extent of Small and Small Disadvantaged Business Participation**

2.3 **PRICE:** Price is of secondary importance to technical criteria, and will be a factor in establishing the competitive range prior to discussions and in making the final determination for award.

**2.4 RELATIVE IMPORTANCE DEFINITIONS:** For this evaluation, the following terms will be used to establish the relative importance of the technical criteria and sub-criteria:

- **Significantly More Important:** The criterion is two times more important in value to the Government than another criterion.
- **More Important:** The criterion is one and one half times more important in value to the Government than another criterion.
- **Equal:** The criterion is of the same value to the Government as another criterion.

**2.5 SUMMARY OF ORDER OF IMPORTANCE for Technical Criteria:**

- Criterion 1 is significantly more important than criterion 2.
- Criteria 2 and 3 are equal.
- Criterion 3 is significantly more important than criterion 4.
- Criteria 4, 5 and 6 are equal.
- Criterion 6 is more important than criterion 7.
- Criteria 7 and 8 are equal.
- Criterion 8 is significantly more important than criterion 9.
- Sub-criterion 1.1 is significantly more important than criterion 1.2.
- Sub-criterion 1.2 and 1.3 are equal.
- 

**2.6 TECHNICAL MERIT RATINGS:** Technical proposals will be evaluated and rated for each criterion using the descriptive scale outlined below:

- **Outstanding** - Information submitted demonstrates an exceptional capability to perform and clear understanding of all aspects of the requirements established by the RFP. The proposal contains no deficiencies or disadvantages, and few, if any, weaknesses that are minor in nature. The proposal significantly exceeds most or all requirements established by the RFP.
- **Above Average** - Information submitted demonstrates the offeror's potential to exceed performance or capability standards. Proposal reflects some strength(s) that may be of benefit to the Government. Few weaknesses or deficiencies are noted, and they are minor in nature. The proposal demonstrates that the requirements of the RFP are understood, that all requirements have been met, and some requirements exceeded.
- **Satisfactory (Neutral)** - Complete and comprehensive proposal reflecting an understanding of the scope and depth of the work. Information submitted demonstrates the offeror's potential to meet the performance requirements or capability standards set forth in the RFP. Few or no advantages or strengths are provided. The proposal contains only minor weaknesses and/or deficiencies. .

- **Marginal** - Information submitted demonstrates only a minimally acceptable understanding of the requirements. The submittal does not adequately address the specific criterion (or sub-criterion) and/or has several deficiencies.
- **Unsatisfactory** - Information submitted fails to meet the requirements established by the RFP. The proposal includes numerous deficiencies and/or gross omissions. Proposal does not reflect an understanding of the requirements of the criterion as established by the RFP.

## 2.7 Definitions of Weakness and Deficiency:

**Weakness:** A flaw in the proposal that increases the risk of unsuccessful contract performance (i.e., meets the RFP requirements, but may have an impact on schedule or quality requirements). A **weakness need not be corrected** for a proposal to be considered for award, but **may** affect the offeror's rating.

**Deficiency:** A material failure of a proposal to meet the Government requirement or a combination of significant weaknesses in a proposal that increases the risk of contract performance at an unacceptable level. A deficiency **must be corrected** for a proposal to be considered for award.

**3. PROPOSAL CONTENTS:** Proposals shall be submitted in two parts: (a) Technical proposal and (b) Price proposal. Each part shall be submitted in a separate envelope/package, with the type of proposal (i.e., Technical or Price) clearly printed on the outside of the envelope/package. **NOTICE TO ALL FIRMS: The information provided for the Pre-qualification Phase of this solicitation process regarding experience and qualifications is considered part of the firm's Technical proposal. No additional information shall be submitted for these evaluation factors.**

## 4. TECHNICAL PROPOSAL:

4.1 A **COVER LETTER** should be the **first page** of the technical proposal and should include:

- (a) Solicitation number.
- (b) Name, address, and telephone and facsimile numbers of the firm signing the SF 1442 (and electronic address).
- (c) Names, titles and telephone and facsimile numbers (and electronic addresses) of persons authorized to negotiate on the firm's behalf with the Government in connection with this solicitation.
- (d) Name, title, and signature of the person authorized to sign the proposal.

(e) A statement specifying agreement (see also (f) below) with all terms, conditions provisions included in the solicitation and agreement to furnish any and all items upon which prices are offered at the proposed item prices.

(f) **DEVIATIONS FROM THE RFP:** In the cover letter, firms shall specifically identify, in a section entitled "Deviations," any deviations from the minimum RFP requirements. All alternates shall be addressed and expanded upon in the firm's proposal or Final Proposal Revision.

(g) **IDENTIFICATION OF ITEMS EXCEEDING RFP REQUIREMENTS:** In an attachment to the cover letter, firms shall list all items exceeding the minimum RFP requirements. The list shall be entitled "IDENTIFICATION OF ITEMS EXCEEDING RFP REQUIREMENTS." All items listed shall be addressed and expanded upon in the firm's initial proposal or Final Proposal Revision.

(h) **FINAL PROPOSAL REVISION:** If required to submit a Final Proposal Revision, the accompanying cover letter shall identify all changes made to the firm's initial proposal along with any deviations from the RFP (per (f) above). In addition, firms shall attach a list (per (g) above) of any additional items exceeding the minimum RFP requirements. This list shall also include elimination of, or revisions to, those items previously identified as exceeding the RFP.

**4.2 TECHNICAL DATA** consisting of drawings, outline specifications, and supporting data (schedules, catalogue cuts, etc.) shall be furnished as part of the formal proposal and shall meet all requirements of the RFP, design standards, technical specifications, and referenced regulations. Data shall be specific and complete, and demonstrate thorough understanding of the requirements. Data shall include, where applicable, complete explanations of procedures and the schedule the firm proposes to follow. Additionally, data shall demonstrate the merit of the technical approach offered and shall be an orderly, specific, and complete document in every detail.

**4.3 TECHNICAL PROPOSAL** except for drawings, shall be submitted in standard letter, hardback loose-leaf binders with a Table of Contents. Contents of the binders shall be tabbed and labeled to afford easy identification. Contents shall follow the order of the evaluation criteria and pages shall be numbered. No material shall be incorporated by reference or reiteration of the RFP. Any such material will not be considered for evaluation. The Technical proposal shall be presented in a manner which allows it to "STAND ALONE" without the need to reference other documents.

**4.4 TECHNICAL PROPOSAL REQUIREMENTS:** Firms submitting proposals should limit submission to data essential for evaluation of proposals so that a minimum of time and monies are expended in preparing information required by the RFP.



4.4.1 Data submitted must reflect the designer's interpretation of criteria contained in the RFP. Drawing information should present basic concepts, arrangements, and layouts. Arrangements, layout plans, and notes may be combined together on single sheets in order to simplify presentation, so long as clarity is maintained. Drawings are not intended to be construction detail plans.

4.4.2 Unnecessarily elaborate or voluminous brochures or other presentations, beyond those sufficient to present a complete and effective response, are not desired and may be construed as an indication of the firm's lack of cost-consciousness. Elaborate artwork, expensive paper and bindings, and expensive/extensive visual and other presentation aids are unnecessary.

4.4.3 Firms are encouraged to prepare drawings for proposal submission using guidelines presented in Section 00810, Paragraph 2, Preparation of Part I Project Design Documents. However, to minimize effort expended by the firms, other formats will be accepted so long as requested information is provided. In either case, firms are encouraged to provide INFORMATIVE DRAWING NOTES to convey important features of their design.

4.4.4 Technical proposals will be evaluated for conformance with the minimum RFP criteria, and for the extent to which they exceed those criteria. While the intent is to keep the pre-award design effort to a minimum, proposals must provide adequate detail for evaluators to determine how the proposals meet or exceed the RFP criteria. It must also form sufficient basis for a fair and reasonable price proposal.

4.5 **MINIMUM SUBMITTAL REQUIREMENTS FOR THE TECHNICAL PROPOSAL**

\*Drawings need to be submitted only if they differ from those included in the RFP.

\*Drawings not revised shall be indicated by reference to the original RFP.

4.5.1 **PROJECT SCHEDULE:** Provide an outline of the plan for design and construction of the project. The schedule shall be prepared in the form of time-scaled (Gantt Chart) summary network diagram and shall graphically indicate sequences proposed to accomplish each work operation and appropriate interdependencies between various activities. Identify critical elements of design and construction that could delay the entire project. The chart shall show the starting and completion times of all activities on a linear horizontal time scale beginning with the notice to proceed with design and indicating calendar days to completion. **The offeror must state the total number of calendar days proposed from receipt of initial notice to proceed for design through completion for the entire project.** Offerors should base their schedule on the information provided in the following Sections of the RFP: Section 00800, SC-1, Commencement, Prosecution and Completion of Work; the Design Submittal Schedule requirements provided in Section 00810, paragraph 1.2 Phase I (~~Design~~)— Requirements and paragraph 1.3 Phase II Requirements; ~~and the Phasing requirements provided in Section 00820, paragraph 1.3.1.3 Phasing.~~ Limit the activities to those critical to timely overall completion of the project (no more than 80). **Allow 21 calendar days each for Government review of 65% and 95% design submittals as**

**described in SECTION 00810. The schedule of the successful offeror shall become the contract completion schedule.**

**4.5.1.1 Evaluation of Schedule:** The firm's planning and scheduling of the work (design, design reviews, construction, demolition, commissioning, and turnover) will be evaluated. Consideration is given to the completeness, reasonableness, and realism of the proposed schedule, and identification of critical elements of design and construction that can delay the entire project.

**4.5.3 Project Management and Quality Control Plans and Organizational Structure and Functional Relationships:**

(a) Provide an organizational chart/authority line diagram that shows the organizational structure and functional relationships of the team proposed for this project, including the lines of communication and authority, and individual roles and responsibilities. Identify the Project Manager, Architect of Record, Lead Design Engineers (i.e., Civil, Electrical, Mechanical and Structural), Chief of Contractor Quality Management System, Chief of Construction Quality Control, and full-time site Superintendent, and other personnel that are key to the project management plan.

(b) Submit the plan for controlling design and construction quality. State the method by which the offeror shall assure that the design meets contract requirements, including all codes, standards, functional and specified design requirements. State the method by which the offeror shall assure that the construction methods and materials meet the design and contract requirements, and the method by which conflicts between design and construction constraints shall be resolved. Provide a subcontractor quality control plan. State the method by which the offeror shall track schedules and assure that the established product delivery dates are met. Provide an outline Quality Control Plan that identifies type of system and personnel responsible for design quality control and major work items and required personnel to perform testing and three-phase inspection (preparatory, initial and follow-up) for construction quality control. As a minimum use major work items identified in Section 01451 CONTRACTOR QUALITY CONTROL for the basis of the outline Quality Control Plan. Provide samples of forms to be used for daily Quality Control Inspections.

**4.5.3.1 Evaluation of Project Management and Quality Control Plans and Organizational Structure and Functional Relationships:** Consideration will be given to the completeness, organization, and detail in conformance with or in exceeding the RFP requirements. Consideration will also be given to the degree the offeror's project management and quality control plans assure the project will be designed and constructed to meet or exceed RFP requirements.

**4.5.4 QUALITY OF CIVIL ENGINEERING DESIGN, METHODS AND MATERIALS** (including quality of materials, finishes, and fixtures proposed for the site):

(a) **Site Design/Analysis Narrative** – The RFP drawings depict the desired site design concept and master plan for the project and are to be followed explicitly in terms of location and layout of the building. Provide narratives on the following:

- Engineering concepts for storm water management, drainage, erosion and sedimentation control, and utility connections.
- Concepts for new roadway, widened roadway, and repaired roadway sections.

**4.5.4.1 Evaluation of Civil Design:** The layout and functionality will be evaluated. Merit will be based on the degree to which the proposed design satisfies the layout and functional requirements specified in the RFP and the quality of materials, finishes, and fixtures proposed for the site.

**4.5.5 QUALITY OF ARCHITECTURAL DESIGN AND MATERIALS** (including development of building systems and the degree to which that development enhances the aesthetics, functionality and maintainability of the facility, as well as quality of systems, products, fixtures, materials, finishes and colors proposed for the facility):

(a) **Architectural Design Narrative** - The architectural design concept for the project, as depicted on the drawings attached to this RFP and further defined in the Statement of Work, shall be used as a basis for design and for preparing the final design for the project. Provide narratives outlining how the design development of building systems shall meet project criteria as well as maintain the intended architectural layout and appearance. At a minimum, the narrative shall address interior and exterior materials (including a discussion of the interior color schemes), construction techniques, assemblies and detailing as appropriate for the facility.

(b) **Interior elevations (drawings/sketches).** Provide drawings to present design intent and proposed detailing.

(c) **Wall Sections.** Provide a typical exterior and a typical interior wall showing foundation, wall composition, floor/ceiling and roof assemblies.

d) **Catalog Cuts** - Provide supporting data and manufacturer's descriptive literature for products and materials proposed for this project including architectural interior and exterior finishes, hardware, doors, blinds, work counters, etc.

**4.5.5.1 Evaluation of Architectural Design:** Technical merit will be based on the degree to which proposed design, methods, materials, and equipment satisfy operational requirements and exceed minimum acceptable quality, including durability, maintainability, reliability and energy efficiency, specified in RFP.

**4.5.6 QUALITY OF STRUCTURAL ENGINEERING** (including development and how the structural systems proposed integrate with the architectural, mechanical and electrical systems proposed for the facility):

(a) **Structural Design Narrative** - Provide a narrative describing the structural systems proposed including descriptions of the roof systems, floor systems, lateral load resisting systems and foundation. This narrative will also discuss the integration characteristics of the structure with architectural, mechanical, electrical and plumbing systems. Also, describe the characteristics of the proposed systems with regard to fire resistive characteristics, vibration response and accommodation of total and differential settlements.

(b) **Schematic Diagrams** showing roof framing and lateral load resisting systems shall be provided.

Note that some characteristics of the structural system may be covered in the architectural response requirements. The offeror is encouraged to provide informative drawing notes, if applicable, to convey important features of their design.

**4.5.6.1 Evaluation of Structural Design:** Technical merit will be based on the degree to which the proposed design satisfies and exceeds minimum requirements specified in RFP. Consideration will be given to the design narrative, including schematic diagrams for lateral load resisting system, and the foundation and roof framing plans.

**4.5.7 QUALITY OF MECHANICAL ENGINEERING DESIGN, METHODS, AND MATERIALS** (including development of the heating, ventilating, plumbing and fire protection systems, as well as the functionality, maintainability and quality of the materials and equipment proposed for these systems):

(a) **Mechanical Design Narrative** - Provide a narrative description of the proposed heating, hydronic heating system, pumping and piping systems, terminal distribution units and temperature control system.

(b) **Drawings/Sketches** - Provide a plan (single line diagram) showing the proposed location of HVAC equipment (i.e., heat exchangers, AHUs, pumps, piping, valves, ducts and filters) and other items of major equipment.

(c) **Catalog Cuts** - Provide manufacturer's descriptive literature identifying type/model of proposed HVAC equipment including technical data. Provide supporting data and manufacturer's descriptive literature for other mechanical and plumbing system components, fixtures, systems, products and materials.

(d) **Fire Protection System** - Provide a narrative covering the following: Building Classification; Occupancy; Sprinkler Zoning and Densities; Control and Detection Systems; Reporting and Alarm Systems. Provide supporting data and manufacturer's descriptive literature for major components of the proposed system.

**4.5.7.1 Evaluation of Mechanical Design:** Technical merit will be based on the degree to which proposed design, construction materials, equipment, and fire protection system satisfy operational requirements and exceed minimum acceptable quality, including durability, maintainability, reliability and energy efficiency, specified in RFP.

**4.5.8 QUALITY OF ELECTRICAL ENGINEERING DESIGN, METHODS, AND MATERIALS** (including development of building and site power, lighting, communications, and security systems, and the functionality, maintainability and quality of materials and equipment proposed for these systems):

(a) Electrical Design Narrative - Provide a narrative description of the proposed electrical, communications and security systems. Narrative shall include the site electrical distribution and connection to the Base power system, electrical characteristics of the building electrical system including spare capacities, building power distribution and branch circuiting.

(b) Lighting Design Narrative - Provide a narrative description of the proposed lighting and control systems including lighting intensities and fixtures proposed for typical hallways and meeting rooms, typical office spaces and site lighting.

(c) Catalog Cuts - Provide manufacturer's descriptive literature and technical data indicating type/model of proposed electrical system components, lighting fixtures, and communications and security system equipment, products and materials proposed.

**4.5.8.1 Evaluation of Electrical Design:** Technical merit will be based on the degree to which proposed design, construction materials, equipment and lighting satisfy operational requirements and exceed minimum acceptable quality, including durability, maintainability, reliability and energy efficiency, specified in RFP.

**4.5.9 TEAM QUALIFICATIONS** (This criterion will be separated into two parts as described below.)

**4.5.9.1 Submittal Requirements for Team Qualifications from the Pre-Qualification Phase** (other than telecommunications subcontractor):

(a) It is expected that the team proposed herein shall be exactly the same as proposed in the pre-qualification portion of this process. In particular, the Project Manager, Project Superintendent, Lead Designers and Engineers, and Construction Quality Control Manager are expected to be exactly the same. **If there is no change to these individuals, submit a statement verifying that there are no changes to the**

**individuals proposed for this portion of your team.** However, if a change is proposed for any of these individuals, the new individual(s) shall possess equal or better qualifications than the individual(s) they are replacing. The offeror is to **provide resumes for the new individual(s) and document how they are equal to or better than the individual(s) they are replacing.** Any resumes provided should be in the format shown in the Phase-One portion of this Section.

**4.5.9.2 Evaluation of Team Qualifications (other than telecommunications subcontractor):** For this criterion, all firms will start with a satisfactory rating on the assumption that no changes have been made to the originally proposed team. The resumes of new team members shall be evaluated against the qualifications of the original team members. If the new individuals have qualifications equal to or greater than those they are replacing, the rating will remain satisfactory. If they are less qualified, the rating will be reduced.

**4.5.9.3 Submittal Requirements for Qualifications and Experience of Telecommunications Subcontractor**

(a) All telecommunications work shall be performed by certified telecommunications contractors and installers. Telecommunications apprentices, if used, shall be closely supervised. No more than two (2) apprentices per journeyman installer shall be permitted in performing the work. All telecommunications equipment shall be furnished and installed by a Washington State Department of Labor and Industries certified, licensed electrical telecommunications (Electrical Contractor TELECOM Contractor). The telecommunications subcontractor shall have the qualifications described in the following paragraphs.

**(b) Minimum Contractor Experience:**

(1) The contractor shall have a minimum of 4 years of experience in the application, installation, and testing of specified systems and equipment. Specific knowledge of the Army I3A telecommunications guide, EIA/TIA standards, and Fort Lewis telecommunications system is preferable. Contractor shall be a certified installer on telecommunications infrastructure components and show proof thereof.

(2) The offeror shall submit a 1-3 page narrative description of the proposed telecommunications contractor describing the firm's recent experience and qualifications, contractors telecom license, together with an organization chart showing the specific administrators, installers, and other telecommunications workers proposed for the project.

**(c ) Minimum Qualifications of Key Positions:** Contractors shall identify telecommunications installers and administrators by name. Contractors shall provide the proposed staff qualifications as stated below for personnel positions to perform work for this contract (i.e., qualifications a person must possess to fill each position). The Contractor personnel must meet the minimum staff qualifications shown below.

- (1) Certified telecommunications administrators and installers assigned to the installation of this system or any of its components shall have appropriate training and State Department of Labor and Industries certification that they are qualified to install and test the provided products. Administrators shall have a minimum of 4 years of recent, relevant experience supervising the installation of telecommunications systems.
- (2) Installers assigned to the installation of this system or any of its components shall have a minimum of 3 years of recent work experience in the installation of EIA/TIA specified copper and fiber optic cable and components.
- (3) Work shall be supervised by a certified telecom administrator. The administrator shall be available to installers any time work is being performed and will review and approve all aspects of the work.

**(d) Qualifications of Proposed Key Personnel:** Provide resumes for your telecommunications administrator (s) and installers who will perform work under the contract resulting from this solicitation. As a minimum, provide resumes for the disciplines identified above and any additional positions that are identified by your firm. Resumes should be no more than one (1) page per individual and should be in the format following format:

***Telecommunications Personnel Qualifications/Experience***

Name/Title
Proposed Duties/Functions (for this project)
Firm Affiliation/Years Affiliated
Years of Experience (performing duties/functions as proposed for this project)
Education (Degree, Year, Specialization)
Active Registrations (and/or Professional/Technical Licenses/Certifications)
Specific Qualifications (for this project, if any)
List of Relevant Projects Including:
Project Title & Location
Project Type (e.g., design-build (DB), design (D), construction (C))
Dollar Value (design \$; construction \$)
Start & Completion Dates (Month/Year)
Duties/Functions (address how this relates to role for solicitation project)
Brief Description of Project (address how this relates to solicitation project)
Customer Point of Contact (i.e., name, relationship to project, agency/firm affiliation, city, state, current phone no.)
Awards or recognition received (if applicable)

**(e) Staff Substitutions:** No substitutions of telecommunication contractor staff will be allowed following contract award without the express written approval of the Government (see Section 00700, clause 52.244-4, Subcontractors and Outside Associates and Consultants (Architect-Engineer Services). Contractor requests for telecommunications subcontractor personnel substitutions shall be made in writing at least four weeks prior to scheduled telecommunications work. Substitutions will generally be discouraged.

**4.5.9.4 Evaluation and Rating of Qualifications and Experience of Telecommunications Subcontractors:** Consideration will be given to the relevance, quality and depth of experience and qualifications required by the prime contractor for each key telecommunication position and key telecommunications personnel. The greater relevance, quality, depth of experience and the qualifications required for the telecommunications subcontractor for the key positions and proposed personnel, the higher the rating assigned.

#### **4.5.10 SUSTAINABLE DESIGN:**

##### **4.5.10.1 Submittal Requirements:**

(a) Provide a narrative describing how sustainable design principles will be used in design process for each discipline. The narrative should address how environmental considerations will be integrated into the design to help conserve resources such as energy and water, reduce waste, maximize use of recovered and recycled materials, minimize the use of toxic and harmful substances in facility construction and operation, and develop safe and healthy living spaces.

(b) Provide a list of recovered/recycled materials proposed for use in the performance of the contract. Recovered materials should be used to the maximum extent practicable. Practicable is defined (per 40 CFR CH.1, 247.3) as capable of being used consistent with (a) performance in accordance with applicable specifications, and (b) availability at a reasonable price, availability within a reasonable period of time, and maintenance of a satisfactory level of competition. See Section 00800 for list of EPA designated items and their definitions.

**4.5.10.2 Evaluation of Sustainable Design:** Evaluation will be based on how well the design will integrate the use of sustainable design principles, the process by which the design and construction will promote the principle of responsible stewardship of the environment, and the extent of use of recovered and recycled materials.

#### **4.5.11 EXTENT OF SMALL/SMALL DISADVANTAGED BUSINESS PARTICIPATION**

##### **4.5.11.1 Submittal Requirements:**

(a) All Offerors (both small and large businesses) are to provide information identifying the extent of participation by Small Businesses (SB), Historically Under-utilized Business (HUB) zone<sup>1</sup> concerns, Small Disadvantaged Businesses (SDB),



Women-Owned Small Businesses (WOSB), and Veteran-Owned Small Businesses (VOSB) planned for work to be performed under this contract. If you are a small business, include the work that will be performed by your firm. If you are a large business, include only the subcontracted work. Even though work performed by both a small business prime and its subcontractors will be considered when evaluating participation, both small and large firms are to use recommended subcontracting goals, as provided in the "Notice to Large Business Firms" located in the front of the solicitation. These recommended goals will be used to evaluate the adequacy of proposed participation.

(b) **Based on the total amount of work to be performed** on this project, offerors (both small and large businesses) should submit the **percentage of work by firm or trade (NO DOLLAR AMOUNTS ARE TO BE SHOWN)** including name or trade and business size [e.g., Large (LB), Small (SB), Historically Under-utilized (HUB) zone<sup>1</sup>, Small Disadvantaged (SDB), Women-Owned (WOSB), and Veteran-Owned (VOSB)] in the sample format below.

**DATA IS FOR EXAMPLE ONLY**			
Firm Name	Project Trade (or scope of responsibility)	Business Size (LB, SB, SDB, VOSB, WOSB, HUBZ)	Work planned to be Performed by Firm <sup>3</sup>
Firm A	Prime	SB	20%
Firm B	Mechanical	SB	41.5%
Firm C	Paving	SDB	9%
Firm D	Site Work	WOSB	5%
Firm E	Concrete Work	HUB	1.5%
Firm F	Structural	LB	20%
Firm G	Structural	VOSB	3%

**NOTES:**

<sup>1</sup> - See FAR 52.219-8 Utilization of Small, Small Disadvantaged and Women-Owned Small Business Concerns in Section 00700 for a definition of these terms. Further guidance and information on laws or regulations referenced can be found at the following internet address:

<http://www.sba.gov/library/lawroom.html>

<sup>2</sup> - A large business, will also be required to submit a formal subcontracting plan in the format provided in the "Notice" with their initial proposal.

<sup>3</sup> - Percentages in this column must total 100% of all work to be performed if the prime is a small business and 100% of the subcontracted work to be performed if the prime is a large business.

<sup>4</sup> - If you find you cannot meet a particular goal, please explain why.

**4.5.11.2 Evaluation of Small Business Participation:** A satisfactory rating may be obtained for demonstrating an effort to meet the goals set forth in the solicitation. Demonstrated efforts to exceed one or more goals will receive higher ratings; depending upon the extent of exceeding the goals.

**5. TECHNICAL PROPOSAL FORMAT:** As a minimum, each copy of the technical proposal should contain the following general format for the volumes specified in the following table. Pages should be numbered consecutively.

***Technical Proposal (original and 5 copies required) (Offerors may separate this information into two volumes if binders become too thick)***

- Technical Proposal Cover Letter
- Table of Contents. (List all sections of the technical proposal)
- Project schedule
- 
- Project management plan, organizational structure, functional relationship data
- Quality control plan
- Civil engineering data
- Architectural design data
- Structural engineering data
- Mechanical design data
- Electrical design data
- Team qualifications data (including telecommunications sub data)
- Sustainable design data
- Small and Small Disadvantaged Business Participation Data

**6. PRICE PROPOSAL FORMAT:** The price proposal shall be submitted in ORIGINAL only, and must be signed by an official authorized to bind your organization. Note that the Standard Form 1442, Block 13D states the minimum number of calendar days after the date offers are due for Government acceptance of the offer.

**PRICE PROPOSAL FORMAT:** A single volume (originals only):

- Standard Form 1442 front and back, Solicitation, Offer and Award with corporate certificate (use the one for joint venture if applicable)
- Pricing Schedule (all schedule pages) (prices must be provided for all line items in the schedule)
- Small and Small Disadvantaged Business Subcontracting Plan (Large businesses only, see letter at front of RFP)
- Section 00600, Representations, Certifications and Other Statements of Offerors
- 20% Bid Bond

**NOTE:** Price proposal and bonds are DUE AT SAME TIME as technical proposals.

## **6.1 Submission of Joint Venture Information**

6.1.1 No contract may be awarded to a firm that is not registered in the Central Contractor Register (CCR). Joint ventures may register in the following way:

(a) The firm that will be the recipient of payments should be registered in the CCR and have a DUNS number. This firm is considered in the CCR to be the “mother firm.” If no money is to go to any other firm in the joint venture, the mother firm may make the other firm in the joint venture a “child.” This child will be assigned the mother firm’s CCR number with an additional four (4) numbers attached. Since the child firm is not receiving any payments, they do not need to get a DUNS number. (HOWEVER, to be safe and cover all possibilities, it might be wise to have each firm registered in the CCR.)

(b) Call the CCR at 1-888-227-2423, choose option “0” to get the mother – child relationship set up. DUN & Bradstreet phone number is 1-800-333-0505.

(c) If the joint venture has a newly created name, then it must have its own DUNS number and register as such in the CCR.

6.1.2 In the cover letter of your proposal, provide the complete names, addresses, and phone and fax numbers of the two firms in the joint venture.

6.1.3 Signature requirements: SF 1442, SOLICITATION, OFFER, AND AWARD (pages 00010-1 and 00010-2), Block 20 requires that the name and title of the person authorized to sign the offer for the joint venture be provided.

6.1.4 Corporate certificate: Ensure that joint-venture portion is completed by both firms.

6.1.5 In the case of a joint venture, the following is required: A contract with joint venturers may involve any combination of individuals, partnerships, or corporations. The contract shall be signed by each participant in the joint venture in the manner prescribed below for each type of participant. When a corporation is participating, the Contracting Officer shall verify that the corporation is authorized to participate in the joint venture.

(a) Individuals. A contract with an individual shall be signed by that individual. A contract with an individual doing business as a firm shall be signed by that individual, and the signature shall be followed by the individual’s types, stamped, or printed name and the words “an individual doing business as .....” [insert name of firm].

(b) Partnerships. A contract with a partnership shall be signed in the partnership name. Before signing for the Government, the Contracting Officer shall obtain a list of all partners and ensure that the individual(s) signing for the partnership have authority to bind the partnership.

(c) Corporations. A contract with a corporation shall be signed in the corporate name, followed by the word “by” and the signature and title of the person authorized to sign. The Contracting Officer shall ensure that the person signing for the corporation has authority to bind the corporation.

6.1.6 In addition to the requirements stated above, and to assure a single point of contact for resolution of contractual matters and payments, the Contracting Officer shall obtain a certificate signed by each participant in the joint venture as follows: In the proposal include the following statement:

“The parties hereto expressly understand and agree as follows:

a. **(name, title, and company)** is the principal representative of the joint venture. As such, all communications regarding the administration of the contract and the performance of the work thereunder may be directed to him or her. In the absence of **(same name, title, and company), (enter name, title, and company of alternate)** is the alternate principal representative of the joint venture.

b. Direction, approvals, required notices, and all other communications from the Government to the joint venture, including transmittal of payments by the Government, shall be directed to **(enter name, title, and company of principal)**, principal representative of the joint venture.”

6.1.7 The bid bond form, Block “Principal” requires that the name and title of the person authorized to sign for the joint venture be included.

6.1.8 After award, the performance and payment bonds, and the insurance certificate(s) provided shall be in the name of the joint venture.

**7. FUNDING.** The total amount of funds available for the design and construction of this project are specified in the Schedule. Offerors should design and construct to this funding limit.

## **8. EVALUATION AND AWARD PROCEDURES**

### **8.1 TECHNICAL EVALUATION:**

8.1.1 All technical proposals will be evaluated by a Technical Evaluation Team (TET). Pricing data will not be considered during this evaluation. Criteria for the technical evaluation are set forth elsewhere in the solicitation and will be the sole basis for determining the technical merit of proposals.

8.1.2 The TET shall utilize the relative importance definitions and technical merit ratings described earlier in this section of the solicitation to perform their technical evaluation.

8.1.3 To be considered for award, proposals must conform to the terms and conditions contained in the RFP. No proposal will be accepted that does not address all criteria specified in this solicitation or which includes stipulations or qualifying conditions unacceptable to the Government.

## 8.2 PRICE EVALUATION:

Price is of secondary importance and will be considered of lower importance than technical factors. Pricing will be independently evaluated to determine reasonableness and to aid in the determination of the firm's understanding of the work and ability to perform the contract. Financial capacity and bonding ability will be verified.

## 8.3 SELECTION AND AWARD:

8.3.1 Subject to provisions contained herein, award shall be made to a single firm. The Government will select the best value offer based on technical merit, price and other pertinent factors (i.e., extent of participation of small and small disadvantaged business concerns).

8.3.2 **BEST VALUE ANALYSIS.** The Government is more concerned with obtaining superior technical features than with making award at the lowest overall cost to the Government. In determining the best value to the Government, the tradeoff process of evaluation will be utilized. The tradeoff process permits tradeoffs among price and non-price factors, and allows the Government to consider award to other than the lowest priced offeror or other than the highest technically rated offeror. You are advised that greater consideration will be given to the evaluation of technical proposals rather than price. It is pointed out, however, that should technical competence between offerors be considered approximately the same, the cost or price could become more important in determining award.

8.3.3 **SELECTION AND AWARD WITHOUT DISCUSSIONS:** It is the intent of the Government to make award based upon initial offers, without further discussions or additional information. Therefore, initial proposals should be submitted based on the most favorable terms from a price and technical standpoint. Do not assume there will be an opportunity to clarify, discuss or revise proposals. If award is not made on initial offers, discussions will be conducted as described below.

8.3.4 **COMPETITIVE RANGE:** Should discussions be warranted, the Contracting Officer may first establish a competitive range comprised of the most highly rated proposals after initial evaluation.

**8.3.5 DISCUSSIONS:** Written or oral (i.e., telephonic) discussions may be conducted by the Contracting Officer during which time firms may make revisions to their initial offers. If a firm's proposal is eliminated or otherwise removed from consideration for award during discussions, no further revisions to that firm's proposal will be accepted or considered. Discussions will culminate in a request for Final Proposal Revisions from remaining firms, the date and time which will be common to all firms.

**8.3.6 AFTER DISCUSSIONS:** If discussions are conducted, revisions to the proposals submitted during discussions, if any, will be evaluated by the TET and, if warranted, an adjustment made to the rating of the proposal previously assigned. After evaluation of any changes to proposed prices resulting from discussions, the Contracting Officer will perform a best value analysis based on the final prices and technical proposals. Selection will be made on the basis of the responsive, responsible firm whose proposal conforms to the RFP and represents the most advantageous offer to the Government, subject to availability of funds.

**8.3.7 DEBRIEFINGS:** Upon written request, unsuccessful firms will be debriefed and furnished the basis for the selection decision and contract award in accordance with FAR 15.505 and FAR 15.506.

**8.3.8 PROPOSAL EXPENSES AND PRECONTRACT COSTS:** This solicitation does not commit the Government to pay costs incurred in preparation and submission of initial and subsequent proposals or for other costs incurred prior to award of a formal contract.

**8.3.9 RELEASE OF INFORMATION:** After receipt of proposals and until contract award, source selection information will not be furnished to any firm.

END OF INTRODUCTORY TEXT TO SECTION 00100

SECTION 00800

SPECIAL CLAUSES

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01003/RL  
FY02 Vehicle Maintenance Facility, Fort Lewis

54068 & 54113

SC-22.            DELETED - EPA ENERGY STAR

SC-23.            RECOVERED MATERIALS



## SPECIAL CLAUSES

SC-1. COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984) (FAR 52.211-10).

The Contractor shall be required to (a) commence work under this Contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 500 calendar days after date of receipt by Contractor of notice to proceed. The time stated for completion shall include final cleanup of the premises. See Section 00860-I DESIGN DEVELOPMENT TECHNICAL CRITERIA, paragraph "Sequencing of Construction" for scheduling and sequence of work.

### SC-1.1 OPTION FOR INCREASED QUANTITY

a. The Government may increase the quantity of work awarded by exercising the Optional Items 0006 through ~~0008-0009~~ at the time of award, or not at all, but no later than 90 calendar days after receipt by Contractor of notice to proceed. Notice to proceed on work Items added by exercise of the option will be given upon execution of consent of surety.

b. The parties hereto further agree that any option herein shall be considered to have been exercised at the time the Government deposits written notification to the Contractor in the mails.

c. The time allowed for completion of any optional items awarded under this contract will be the same as that for the base items, and will be measured from the date of receipt of the notice to proceed for the base items.

SC-1.2 Exception to Completion Period(s): In case the Contracting Officer determines that completion of seeding, sodding, and planting, and establishment of same is not feasible within the completion period(s) stated above, the Contractor shall accomplish such work in the first planting period following the contract completion period and shall complete such work as specified, unless other planting periods are directed or approved by the Contracting Officer.

### SC-2. LIQUIDATED DAMAGES – CONSTRUCTION (SEP 2000) (FAR 52.211-12)

(a) If the Contractor fails to complete the work within the time specified in the Special Clause SC-1, or any extension, the Contractor shall pay to the Government as liquidated damages, the sum of \$1,061.00. for each day of delay.

(b) If the Government terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the Government in completing the work.

(c) If the Government does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

(d) Exception to Liquidated Damage: In case the Contracting Officer determines that completion of work stated above in paragraph Exception to Completion Period(s) is not feasible during the completion period(s) stated in SC-1, such work will be exempted from liquidated damages.

SC-3. ~~AND SC-4~~ DELETED.

SC-4. VARIATIONS IN ESTIMATED QUANTITIES - SUBDIVIDED ITEMS (MAR 1995) (EFARS 52.212-5001): This variation in estimated quantities clause is applicable only to Item Nos. 0001, 0002, 0003, 0004 and 0005.

(a) Variation from the estimated quantity in the actual work performed under any second or subsequent sub-item or elimination of all work under such a second or subsequent sub-item will not be the basis for an adjustment in contract unit price.

(b) Where the actual quantity of work performed for Items Nos. 0001, 0002, 0003, 0004 and 0005 is less than 85 % of the quantity of the first sub-item listed under such item, the Contractor will be paid at the contract unit price for that sub-item for the actual quantity of work performed and, in addition, an equitable adjustment shall be made in accordance with the clause FAR 52.211-18, Variation in Estimated Quantities.

If the actual quantity of work performed under Items Nos. 0001, 0002, 0003, 0004 and 0005 exceeds 115 percent or is less than 85 percent of the total estimated quantity of the sub-item under that item and/or if the quantity of the work performed under the second sub-item or any subsequent sub-item under Items Nos. 0001, 0002, 0003, 0004 and 0005 exceeds 115 % or is less than 85 % of the estimated quantity of any such sub-item, and if such variation causes an increase or a decrease in the time required for performance of this contract the contract completion time will be adjusted in accordance with the clause FAR 52.211-18, Variation in Estimated Quantities.

SC-5. INSURANCE - WORK ON A GOVERNMENT INSTALLATION (JAN 1997) (FAR 52.228-5)

(a) The Contractor shall, at its own expense, provide and maintain during the entire performance period of this Contract at least the kinds and minimum amounts of insurance required in the Insurance Liability Schedule or elsewhere in the Contract.

(b) Before commencing work under this Contract, the Contractor shall certify to the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective:

(1) for such period as the laws of the State in which this Contract is to be performed prescribe; or

(2) until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this Contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the Contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

(d) Insurance Liability Schedule (FAR 28.307-2)

(1) Workers' compensation and employer's liability. Contractors are required to comply with applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when Contract operations are so commingled with a Contractor's commercial operation that it would not be practical to require this coverage. Employer's liability coverage of at least \$100,000 shall be required, except in states with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.

(2) General Liability.

(i) The Contracting Officer shall require bodily injury liability insurance coverage written on the comprehensive form of policy of at least \$500,000 per occurrence.

(ii) Property damage liability insurance shall be required only in special circumstances as determined by the agency.

(3) Automobile liability. The Contracting Officer shall require automobile liability insurance written on the comprehensive form of policy. The policy shall provide for bodily injury and property damage liability covering the operation of all automobiles used in connection with performing the Contract. Policies covering automobiles operated in the United States shall provide coverage of at least \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.

(4) Aircraft public and passenger liability. When aircraft are used in connection with performing the Contract, the Contracting Officer shall require aircraft public and passenger liability insurance. Coverage shall be at least \$200,000 per person and \$500,000 per occurrence for bodily injury, other than passenger liability, and \$200,000 per occurrence for property damage. Coverage for passenger liability bodily injury shall be at least \$200,000 multiplied by the number of seats or passengers, whichever is greater.

(5) Environmental Liability. If this contract includes the transport, treatment, storage, or disposal of hazardous material waste the following coverage is required.

The Contractor shall ensure the transporter and disposal facility have liability insurance in effect for claims arising out of the death or bodily injury and property damage from hazardous material/waste transport, treatment, storage and disposal, including vehicle liability and legal defense costs in the amount of \$1,000,000.00 as evidenced by a certificate of insurance for General, Automobile, and Environmental Liability Coverage. Proof of this insurance shall be provided to the Contracting Officer.

SC-6. DELETED.

SC-7. PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984) (FAR 52.236-1): The Contractor shall perform on the site, and with its own organization, work equivalent to at least fifteen (15) percent of the total amount of work to be performed under the Contract. The percentage may be reduced by a supplemental agreement to this Contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government.

SC-8. PHYSICAL DATA (APR 1984) (FAR 52.236-4): Data and information furnished or referred to below is for the Contractor's information. The Government will not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) Physical Conditions: The indications of physical conditions on the drawings and in the specifications are the result of site investigations by test holes shown on the drawings.

(b) Weather Conditions: Each bidder shall be satisfied before submitting his bid as to the hazards likely to arise from weather conditions. Complete weather records and reports may be obtained from any National Weather Service Office.

(c) Transportation Facilities: Each bidder, before submitting his bid, shall make an investigation of the conditions of existing public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the jobsite. The unavailability of transportation facilities or limitations thereon shall not become a basis for claims for damages or extension of time for completion of the work.

SC-9. DELETED.

SC-10. LAYOUT OF WORK (APR 1984) (FAR 52.236-17): The Contractor shall lay out its work from Government-established base lines and bench marks indicated on the drawings and marked in the field by the Government, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at its own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through its negligence before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due, or to become due, to the Contractor.

SC-11 THROUGH SC-12. DELETED.

SC-13. IDENTIFICATION OF GOVERNMENT-FURNISHED PROPERTY (APR 1984) (FAR 52.245-3): The Government will furnish to the Contractor the property identified in the schedule to be incorporated or installed into the work or used in performing the contract. The listed property will be furnished to the Contractor at the place designated by the Contracting Officer. The Contractor is required to accept delivery, pay any demurrage or detention charges, and unload and transport the property to the jobsite at its own expense. When the property is delivered, the Contractor shall verify its quantity and condition and acknowledge receipt in writing to the Contracting Officer. The Contractor shall also report in writing to the Contracting Officer within 24 hours of delivery any damage to or shortage of the property as received. All such property shall be installed or incorporated into the work at the expense of the Contractor, unless otherwise indicated in this contract

(b) For purposes of calculating the amount of Washington State Use Tax to be included in his bid; the Contractor shall use an estimated value of \$250,000.00 for Government-furnished Contractor-installed (GF/CI) equipment/property. Ultimately the actual cost of equipment furnished will be used to adjust the final contract amount by modification to reflect the user tax excluding Contractor markups, actually paid by the Contractor for GF/CI equipment schedule.

#### SCHEDULE

<u>QUANTITY</u>	<u>ITEM</u>	<u>DESCRIPTION</u>	<u>VALUE (TOTAL)</u>
	<u>Miscellaneous Equipment and Appliances Itemized in</u>	<u>See Section 00860, Para. 3.2.5.</u>	<u>\$250,000.00</u>

Section 00860

SC-14. EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE -(MAY 1999)-(EFARS 52.231-5000)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for Settlement of Proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region VIII. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet.

(e) Copies of EP1110-1-8 "Construction Equipment Ownership and Operating Expense Schedule" Volumes 1 through 12 are available in Portable Document Format (PDF) and can be viewed or downloaded at <http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/cecw.htm>. A CD-ROM containing (Volumes 1-12) is available through either the Superintendent of Documents or Government bookstores. For additional information telephone 202-512-2250, or access on the Internet at [http://www.access.gpo.gov/su\\_docs](http://www.access.gpo.gov/su_docs).

SC-15. PAYMENT FOR MATERIALS DELIVERED OFF-SITE (MAY 1999) -(EFARS 52.232-5000)

(a) Pursuant to FAR clause 52.232-5, Payments Under Fixed Priced Construction Contracts, materials delivered to the contractor at locations other than the site of the work may be taken into consideration in making payments if included in payment estimates and if all the conditions of the General Provisions are fulfilled. Payment for items delivered to locations other than the work site will be limited to: (1) materials required by the technical provisions; or (2) materials that have been fabricated to the point where they are identifiable to an item of work required under this contract.

(b) Such payment will be made only after receipt of paid or receipted invoices or invoices with canceled check showing title to the items in the prime contractor and including the value of material and labor incorporated into the item. In addition to petroleum products, payment for materials delivered off-site is

limited to the following items: Any other construction material stored offsite may be considered in determining the amount of a progress payment.

SC-16. ORDER OF PRECEDENCE - DESIGN/BUILD CONTRACT

(a) The contract includes the standard contract clauses and schedules current at the time of contract award. It entails (1) the solicitation in its entirety, including all drawings, cuts, and illustrations and any amendments, and (2) the successful offeror's accepted proposal. The contract constitutes and defines the entire agreement between the Contractor and the Government. No documentation shall be omitted which in any way bears upon the terms of that agreement.

(b) In the event of conflict or inconsistency between any of the provisions of this contract, including the Request for Proposal, Contractor's proposal, or contract deliverable, precedence shall be given in the following order:

(1) Betterments: Any portions of the accepted proposal, or any subsequent design or other submittal, which both conform to and exceed the provisions of the Request for Proposal. "Betterment" is defined as any product, component, or system, which exceeds the minimum requirements stated in the Request for Proposal.

(2) The provisions of the solicitation: (See also Contract Clause: SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION)

(3) All other provisions of the accepted proposal including RFP Standard Form SF1442 and Schedule.

(4) Any design products including, but not limited to, plans, specifications, engineering studies and analyses, shop drawings, equipment installation drawings, etc. These are "deliverables" under the contract and must conform to or exceed all provisions of the contract, in order of precedence herein.

SC-17 LIMITATION OF PAYMENT FOR DESIGN: If it should be necessary to terminate this contract, for any reason, prior to completion, the Government will pay the Contractor a fair and reasonable price for the design or construction services performed and delivered to the Government. However, such payment will not exceed a sum greater than the amount allowable under 10 USC 4540 regardless of the actual costs the Contractor may be able to substantiate.

SC-18. AND SC-19 - DELETED.

SC-20. COMPLIANCE CERTIFICATION

The offeror shall certify, in the technical proposal cover letter and by note on each sheet of working drawings, that all items submitted in proposal and final design documents comply with RFP requirements. The requirements specified in the RFP are binding contract requirements. In case of any conflicts after the contract award between the requirements stated in the RFP and the offeror's proposal, the RFP requirements shall govern.

SC-21. VALUE ENGINEERING: The Corps of Engineers encourages all offeror's to utilize the Value Engineering methodology and functional analysis techniques. These techniques will most often result in a quality and cost effective product.

SC-22. DELETED.

SC-23. RECOVERED MATERIALS: The Corps of Engineers encourages all bidders to utilize recovered materials to the maximum extent practicable. The attached APPENDIX R contains procurement guidelines for products containing recovered materials.

## APPENDIX R

### PART 247 - COMPREHENSIVE PROCUREMENT GUIDELINE FOR PRODUCTS CONTAINING RECOVERED MATERIALS

#### 40 CFR Ch. 1 (9-1-99 Edition)

##### Subpart B-Item Designations

#### § 247.10 Paper and paper products.

Paper and paper products, excluding building and construction paper grades.

#### § 247.11 Vehicular products.

- (a) Lubricating oils containing re-refined oil, including engine lubricating oils, hydraulic fluids, and gear oils, excluding marine and aviation oils.
- (b) Tires, excluding airplane tire
- (e) Reclaimed engine coolants, excluding coolants used in non-vehicular applications.

#### 247.12 Construction products.

##### (a) Building insulation product including the following items:

- (1) Loose-fill insulation, including but not limited to cellulose fiber, mineral fibers (fiberglass and rock vermiculite, and perlite;
- (2) Blanket and batt insulation, including but not limited to mineral fibers (fiberglass and rock wool).
- (3) Board (sheathing, roof decking wall panel) insulation, including but not limited to structural fiberboard and laminated paperboard products perlite composite board, polyurethane, polyisocyanurate, polystyrene, phenolics, and composites; and
- ~~(2)~~ (4) Spray-in-place insulation, including but not limited to foam-in-place polyurethane and polyisocyanurate and spray-on cellulose.
- (b) Structural fiberboard and laminated paperboard products for applications other than building insulation, including building board, sheathing shingle backer, sound deadening board, roof insulating board, insulating wallboard, acoustical and non-acoustical ceiling tile, acoustical and non-acoustical lay-in panels, floor underlayments, and roof overlay (cover board).
- (c) Cement and concrete, including concrete products such as pipe and block, containing coal fly as ground granulated blast furnace (GGBF) slag.
- (d) Carpet made of polyester fiber use in low- and medium-wear applications.
- (e) Floor tiles and patio block containing recovered rubber or plastic.
- (f) Shower and restroom dividers/partitions containing recovered plastic or steel.
- (g) (1) Consolidated latex paint used for covering graffiti; and
- (2) Reprocessed latex paint used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood and metal surfaces.

#### §247.13 Transportation products.

- (a) Traffic barricades and traffic cones used in controlling or restricting vehicular traffic.
- (b) Parking stops made from concrete or containing recovered plastic or rubber.
- (c) Channelizers containing recovered plastic or rubber.
- (d) Delineators containing recovered plastic, rubber, or steel.
- (e) Flexible delineators containing recovered plastic.



§ 247.14 Park and recreation products

- (a) Playground surfaces and running tracks containing recovered rubber or plastic.
- (b) Plastic fencing containing recovered plastic for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

247.15 Landscaping products.

- (a) Hydraulic mulch products containing recovered paper or recovered wood used for hydroseeding and as an over-spray for straw mulch in landscaping, erosion control, and soil reclamation.
- (b) Compost made from yard trimmings, leaves, and/or grass clippings for use in landscaping, seeding of grass or other plants on roadsides and embankments, as a nutritious mulch under trees and shrubs, and in erosion control and soil reclamation.
- (c) Garden and soaker hoses containing recovered plastic or rubber.
- (d) Lawn and garden edging containing recovered plastic or rubber.

§ 247.16 Non-paper office product.

- (a) Office recycling containers and office waste receptacles.
- (b) Plastic desktop accessories.
- (c) Toner cartridges.
- (d) Binders.
- ~~(f)~~ ~~(e)~~ Plastic trash bags.
- ~~(g)~~ ~~(f)~~ Printer ribbons.
- ~~(h)~~ ~~(g)~~ Plastic envelopes.

§ 247.17 Miscellaneous products.

Pallets containing recovered wood, plastic, or paperboard.

END OF SECTION

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## SECTION 00810

### DESIGN-BUILD CONTRACT PROCEDURES

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## SECTION 00810

### DESIGN-BUILD CONTRACT PROCEDURES

1. GENERAL CONTRACT PROCEDURES: The contract will be conducted in two phases: Phase I is the preparation and review of project design documents. Phase II consists of construction of the facility designed in Phase I. In order to assist the Contractor in completing the contract within the agreed upon contract completion time, Phase I and Phase II will each consist of two parts. The first part will be the Site, Foundation and Site Utilities, and the second part will be Building and All Other Work. Construction is not to commence until the Government has reviewed and approved the applicable design documents for that part of the construction. For example, after review of Site Foundation and site Utilities Design, the Government may issue an interim Notice to Proceed for that portion of the project. The Government reviews the Contractor's design documents for compliance with the contract. The Contractor is totally and solely responsible for the design, coordination, compatibility, and completeness of each and every phase and compliance with contract requirements. Prior to start of each phase there will be a meeting to discuss Contractor's Quality Control Plan. See the Technical Specifications, Division 1, and Section 01451 - Contractor Quality Control, for details.
- 1.1 PREDESIGN CONFERENCE: Within five working days after notice to proceed with the contract a predesign conference will be held to acquaint the Contractor with the general plan of contract administration and requirements under which the design is to proceed.
- 1.2 PHASE I – REQUIREMENTS
  - 1.2.1 Design Submittals. The Contractor shall prepare and distribute project design documents in accordance with the schedules provided herein. Each submittal shall be in accordance with the requirements of the contract documents and all other terms and conditions of the contract.
  - 1.2.2 Design Reviews.
    - (1) The Government intends to use no more than 21 calendar days for review of submittals. Design submissions found to be incomplete or not in compliance with the contract will be returned to the Contractor for correction and re-submission. Under such circumstances the Government will have an additional 14 calendar day review period, to commence upon receipt of the revised submittals, and there will be no increase in the contract completion date provided. Contract completion time (see contract clause entitled "Commencement, Prosecution, and Completion of Work") includes time for Government review of Contractor prepared project design documents.

DESIGN SUBMITTAL SCHEDULE

<u>Submittal</u>	<u>Suspense</u>	<u>Submittal Items</u>
Site, Utilities and Foundation (developed to 95%). Building Design (developed to 65%).	See Note 1	See Specifications & Drawings Distribution See Note 4
Revised Site, Utilities and Foundation Design (developed to 100%)	See Note 2	See Specifications & Drawings Distribution See Note 4
Building Design and All Other Work (developed to 95%)	See Note 3	See Specifications & Drawings Distribution See Note 4
Revised Building Design (developed to 100%) and Site, Utilities and Foundation Design documents with this final back check submittal.	See Note 2	See Specifications & Drawings Distribution See Note 4

NOTES: The Contractor shall complete suspense in the above schedule. Suspense is to be measured as the number of Calendar Days after Notice to Proceed (NTP) with the Contract.

1. The number of calendar days for completion shall be no more than 90 calendar days after NTP with the contract.
2. The number of calendar days for completion of the revised submittal shall include Government review time as specified in paragraph Design Reviews herein and time for the Contractor to complete required corrections and shall be no later than 14 calendar days after Contractor receipt of the Government review comments.
3. The number of calendar days for completion shall be no more than 150 calendar days after NTP with the contract.
4. Specifications, drawings and design calculations to be stamped and signed (see paragraph 2.2)
5. The Building-Related Interior Design (BRID) and a Furniture-Related (FRID) Interior Design will be reviewed and approved at the 65% Building Design review

## SPECIFICATIONS AND DRAWINGS DISTRIBUTION

Addressee	Site, Utilities & Foundation (95%)						Site, Utilities & Foundation (100%)					Architectural Rendering (Submit with 95% Building Design)					Building Design (100%) Submittal					Final Sealed Drawings				
	Building Design (65%) <b>SUBMITTAL</b>						Building Design (95%) Submittal															Site, Utilities & Foundation & Building Design				
	Specifications	½ Size Drawings	Full Size Drawings	Design Analysis	BRID/FRID	Exterior Color Board	Specifications	½ Size Drawings	Full Size Drawings	Design Analysis	Annotated Comments	Framed Orig. Rend.	Framed Color Print	35mm Color Slides	4" x 5" Color Neg.	Electronic Image (BMP)	Specifications	½ Size Drawings	Full Size Drawings	Design Analysis	Annotated Comments	Specifications	½ Size Drawings	Full Size Drawings	Electronic Spec's	Electronic Drawings
Anil Nisargand <sup>1</sup>	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	2
John Zabukovec <sup>2</sup>	10	10	0	10		1	10	10	0	10	10	0	0	0	0	1	5	5	0	5	5	2	2	0	1	1
<u>Karen Peterson</u> <sup>3</sup>	1	1	0	1		0	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1
Christine Een <sup>4</sup>	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1	1	1		1	1	1
Doug Ramsey <sup>5</sup>	2	2	0	2		0	2	2	0	2	1	0	0	0	0	0	2	2	0	2	1	2	2	0	0	0
Joe Carroll <sup>6</sup>	10	10	1	10	1	1	10	10	1	10	1	0	1	0	0	1	3	3	1	3	1	3	3	1	1	1
<u>Tommy Kyzar</u> <sup>7</sup>	2	2	0	2		0	2	2	0	2	2	2	0	2	2	2	2	2	0	2	2	2	2	0	1	1
Fort Detrick Engineering Officer <sup>8</sup>	1	1	0	1		0	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	1
Totals	27	27	2	27	2	3	27	27	2	27	17	3	3	4	4	7	15	14	2	15	12	13	12	2	8	8

1	U.S. Army Corps of Engineers, Seattle District ATTN: CENWS-EC-DB-SP (Nisargand) P.O. Box 3755 Seattle, WA 98124 - 3755
2	U.S. Army Corps of Engineers, Seattle District ATTN: CENWS-EC-CO-TR (Zabukovec) P.O. Box 3755 Seattle, WA 98124-3755
3	U.S. Army Corps of Engineers, Seattle District ATTN: CEWNS-PM-MB ( <del>Peterson</del> <del>Saepoff</del> ) P.O. Box 3755 Seattle, WA 98124-3755
4	U.S. Army Corps of Engineers Northwest Area Office (CENWS-EC-CO-CA) P.O. Box 92146 Tillicum, WA 98492-0146 ATTN: Christine Een
5	U.S. Army Corps of Engineers Northwest Area Office (CENWS-EC-CO-TR) P.O. Box 92146 Tillicum, WA 98492-0146 ATTN: Doug Ramsey
6	HQ, I-Corps and Fort Lewis ATTN: AFZH-DPW-P (Joe Carroll) Bldg 4301, Main Street, North Fort Lewis Fort Lewis WA 98433-5000
7	HQ, U.S. Army Forces Command ATTN: AFEN-PR/ <del>Kyza</del> <del>Kleinman</del> 1777 Hardee Ave, SW Fort McPherson, GA 30330-1062
8	Mr. Harold Herman Dir, USAISEC-FDEO ATTN: AMSEL-IL-DE-IN-CO 1435 Porter Street, Suite 200 Fort Detrick, MD 21702-5047

- (2) Government review does not constitute approval or acceptance of any variations from the RFP or from the Contractor's proposal unless such variations have been specifically pointed out by the Contractor in writing and authorized in writing by the Government. The responsibility for a total design in accordance with the contract will remain with the Contractor and any interim NOTICE TO PROCEED with construction will in no way mitigate against that responsibility.
- (3) The Contractor is required to respond to all review comments and submit the annotated comments in the subsequent revised design submittal. All comments must both be accepted and incorporated into the design or rebutted to the Government's written satisfaction.



- (4) The Contractor shall utilize Corps of Engineers DrChecks software for annotating and managing review comments. DrChecks is a Web-based system accessible via the Internet through Corps of Engineers Seattle District home page. Go to <http://www.nws.usace.army.mil/> and click the "Dr. Checks" button. Software platform for using DrChecks is a Pentium PC with Windows 95 (or above), Microsoft Internet Explorer 4.0 (or above) or Netscape Navigator (or above), and the capability to send Internet email. The Contractor shall provide this software platform for its staff requiring access to annotate or manage comments.
  - 1.2.3 Design Review Conferences. Approximately 2 weeks after submission of design material for Government review a design review conference may be convened by the Government and held between the Government and the Contractor to discuss the submission and the Government's review comments.
  - 1.2.4 Project Design Documents. After the Contractor's revised final submittal of the design documents have been back checked and accepted by the Government, corrected signed and sealed contract drawings in electronic file format, along with complete sets of 1/2 size prints taken from the disk, corrected specifications in electronic file format shall be submitted to the personnel listed on Specification and Drawing Distribution List. The documents shall be submitted on ISO 9660 format CD-ROM. The Contractor shall also provide the following to the Government:
    - (1) Full size drawings
    - (2) 1/2 size drawings
    - (3) Specifications.
    - (4) Electronic set of contract drawings in CALS format, along with the index.txt file and .svd file, on ISO 9660 CD-ROM.Quantity and distribution of these documents shall be as shown on the "Specification and Drawing Distribution List", or as directed by the Government at the design review conference.
- 1.3 PHASE II - REQUIREMENTS:

After the Contractor has completed the applicable project design documents (see Phase I - Requirements above) the Government will issue to the Contractor a notice to proceed with construction.

  - 1.3.1 Pre-construction Conference. Prior to commencement of construction, a Pre-construction Conference will be held to acquaint the Contractor with the general plan of contract administration and requirements under which the construction operation is to proceed. This conference will also inform the Contractor of the obligations concerning equal opportunity and Federal wage rates reporting system.
  - 1.3.2 Contract Closeout. Completion, acceptance, and contract settlement are accomplished when final punch list items (see Section 00700 - Contract Clause Inspection of Construction) have been completed and approved, "as-built" drawings are complete, and warranty provisions and dates are established.
2. PREPARATION OF PHASE I - PROJECT DESIGN DOCUMENTS

- 2.1 GENERAL. The Phase I project design documents shall include construction drawings, specifications, and design analysis for categories such as, but not limited to, demolition, architectural, fire protection/life safety, civil, structural, mechanical, electrical, grading, drainage, paving, telecommunications, and utility service. Provide specifications in sufficient detail to fully describe and demonstrate the quality of materials, the installation, and performance of equipment, and the quality of workmanship. Detailing and installation of all equipment and materials shall comply with the manufacturer's recommendations and base standards. Provide a design analysis for each discipline of work with sufficient backup data including the necessary calculations, tables, methods, and sources used in determining equipment and material sizes and capacities. Design development shall conform to the criteria and requirements of Section 00860 - Statement of Work.
- 2.2 ARCHITECT OF RECORD. All construction drawings and design calculations of the Contractor and any changes to these documents shall be affixed with the registration stamp (seal) of the Architect of Record (see Section 01451 Contractor Quality Control, paragraph 3.4 Quality Control Organization) and that of all consultants, as appropriate, (i.e. structural, civil, mechanical, electrical, and fire protection engineers) before submittal for review. All design professionals shall have current registration to practice in the United States. Approval shall be indicated on all documents by having the professional stamp/seal of architect or engineer with personal signature over same appearing on all sheets as applicable to their specialties.
- 2.3 CONSTRUCTION DRAWINGS: the Contractor in preparing construction drawings shall utilize AutoCAD. The drawing format, border, etc. shall comply with COE Seattle District CADD standards, which are available at <http://www.nws.usace.army.mil/>. The AutoCAD version, electronic file format and layering shall be as specified in Section 01702, As Built Record Drawings. The project title is FY02 Vehicle Maintenance Facility, Fort Lewis, Washington, and Project Number is PN 54068 & 54113. The project drawing file number is 22s/214-10-39, and individual drawing plates are to be identified as follows:

Title/Location/Index:	G-1		
Demolition:	D-1 and Following	Structural:	S-1 and Following
Civil:	C-1 and Following	Mechanical:	M-1 and Following
Architectural:	A-1 and Following	Plumbing:	P-1 and Following
Fire Protection:	FS-1 and Following	Electrical:	E-1 and Following
Landscape	L-1 and Following		

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**NOTE:** This is a metric project and all project design documents are to be prepared in metric units. The following publications are recommended as guides to aid the Contractor in the preparation of the project design documents:

**METRIC GUIDE FOR FEDERAL CONSTRUCTION**

Published by - National Institute of Building Sciences  
1201 L Street NW  
Washington, D.C. 20005 (202) 289-7800

**MASTERMETRIC** - A Guide for Using the International System of Units (SI)  
in Construction Documents

Published by - AIA Master Systems - MASTERSPEC Specifications  
332 East 500 South Street  
Salt Lake City, Utah 84111-3309 (800) 424-5080

\*\*\*\*\*

Construction drawings shall include all details necessary to portray the design requirements. All construction drawings shall be signed by the responsible registered professional engineer or architect. The following minimum drawings shall be submitted:

- (1) Site plan(s) which accurately show existing and finish grade contours and drainage, location of pavements, layout of major utility lines, features to be retained or removed, location of all buildings, and project boundaries.
- (2) Typical site paving including pavement and soil cross sections and site utilities including locations of valves, hydrants, etc.
- (3) Architectural floor plans, which show overall dimensions, room dimensions and areas, equipment and fixtures and door swings. (1:50 scale shall be used for plans of toilets and elevations and sections as necessary for clarity).
- (4) Foundation plans showing sections and details, including Vaults.
- (5) Structural plans including framing plans, sections and details. Include all Vault plans, sections, and details.
- (6) Exterior elevations which show all elevations and identify exterior materials.
- (7) Typical sections (1:50 scale or larger) for each type of foundation, floor, wall, and roof construction, including Vault areas. Include exterior walls, interior bearing walls/floors, partitions, and all other typical conditions.
- (8) Interior elevations, which show floor, ceiling, wall materials and type of fixtures for rest rooms.
- (9) Interior finish schedule, which shows materials and colors for wall, ceiling, and floor finishes for each room. Indicate ceiling heights.
- (10) Door schedule which shows type, size, material, fire rating, hardware group, and frame information.
- (11) Fixture and Equipment Plans (1:50 scale) show compatibility of equipment and fixture placement.
- (12) Mechanical drawings shall include HVAC layout, Plumbing layout, and Fire protection layout drawings. Administrative area, mechanical room, fuel storage tanks shall be a minimum of 1:50 scale minimum and at least one level two if required for clarity. Single line diagrams of each type of piping system, HVAC system, and control logic diagrams. Type and capacity of all mechanical equipment shall be clearly indicated including necessary schedules listing operating data. The equipment capacities shall reflect actual performance of selected equipment. The schedules shall contain all pertinent information. The designer shall provide all calculations backing up equipment performance. For example: coils shall be de-rated for the glycol and altitude required by the project.

- (13) Electrical, Interior: The drawings shall include all power and lighting circuits. Panels and circuits for the various pieces of equipment and lighting systems shall be properly identified and separate plans provided for power, lighting and auxiliaries. Include riser (one line) diagrams for power for auxiliaries and schedules for panels, lighting, etc. Auxiliaries to include telephone, fire alarm, public address system etc.
- (14) Electrical, Exterior: The drawings shall include all exterior distribution transformers, primary electrical service, underground electrical ducts, manholes and details of all new construction.
- (15) Equipment schedules and installation details (1:20 scale or larger) for each special detail.

2.4 SPECIFICATIONS. For the preparation of construction specifications the Contractor shall utilize the guidance provided in Section 00860 - Statement of Work and the outline Specifications Division 2 through 16 provided in Section 00890. These specifications were prepared in accordance with the RFP requirements and reflect guidance for materials, equipment, and workmanship required for this project. In case of discrepancy between specifications and the RFP requirements, the RFP governs. The Contractor shall create full specifications to incorporate the most current applicable publications (codes, ASTM's, etc.).

NOTE: In preparing the specifications the Contractor shall use Unified Facility Guide Specifications (UFGS), which are a joint effort of the US Army Corps of Engineers, the Naval Facilities Engineering Command, and the Air Force Civil Engineering Support Agency.

The Contractor is to provide specifications covering all work for Divisions 2 through 16. All specifications shall be prepared and submitted in CSI three-part format per UFGS standards. The specifications shall require furnishing additional information such as shop or working drawings, manufacturer's literature, certificates of compliance, material samples, and guarantees necessary to assure that the work can be completed and conforms with the criteria contained in the contract and that supervision and inspection of the project can be maintained. Several specification sections have been included in this RFP and will be required to become part of the final design. The Division 1 Specifications included in the RFP have been prepared by the Government and shall not be revised by the Contractor except for the following input:

- (1) Section 01330 Submittal Procedures. Complete the submittal register ENG Form 4288. See specification Section 01330 for guidance and sample blank form. The submittal register shall be prepared in Microsoft Excel, and both hard copy and electronic file shall be furnished with the contract documents.
- (2) Section 01451 Contractor Quality Control. Review and edit, if necessary, Table 1 - Minimum Sampling and Testing Frequency to assure that the materials and minimum sampling and testing frequency shown are applicable for the work being done.
- (3) Section 01452 - Special Inspection for Seismic Resistant Systems. The Contractor shall edit the guide specification 01452 as applicable to the design.
- (4) Section 01704 Form 1354 Checklist. An initial Form 1354 Checklist shall be prepared and submitted with the Project Design Documents identified in paragraph 1.2.4 above. The Form 1354 Checklist and the instructions for completion are provided in Specification Section 01704. This initial submittal will be considered a draft Form 1354 Checklist. The Contractor shall update and submit the form during construction in accordance with the instructions provided in Section 01704.

2.5 DESIGN ANALYSIS. Design analysis includes complete design narrative and backup calculations to support each discipline of work. The Contractor shall utilize the guidance provided in Section 00860 - Statement of Work, and the following requirements. These analyses should include, but not be limited to, civil, structural, electrical and mechanical systems. Include computations for sizing equipment, air duct design, hydronic system design, ventilation design, and thermal resistance factors for ceilings, roofs, and exterior walls and floors. Provide zonal cavity lighting calculations for all interior lighting and point lighting calculations for all exterior lighting. Provide short circuit, load flow, and any necessary coordination studies. Provide vendor cut sheets of major items, or items which are not commonly available. Design analyses shall be presented in a clear and legible form incorporating a title page, and a table of contents. Sources of information, formula, and references shall be explained. Assumptions and conclusions shall be explained and cross-referencing is to be clear. Design analyses shall be accomplished by Registered Professional Engineers or Architects qualified in the respective design field (see paragraph 2.2 Architect of Record).

- (1) When a computer program is used, the program shall be named and described. This description must be sufficient to verify the validity of methods, assumptions, theories, and formulas.
- (2) Spreadsheet style programs are acceptable for structural analysis and design. Under a repetitive condition, at least one manual computation must be performed for each unique condition. All data, formulas and any referenced items should be clearly shown before initiation of the program. Any computer models generated for use with modeling programs should be accompanied by drawings indicating coordinate system, joint numbering and element/member numbering scheme. Maximum stresses used to design a member that are printed out in summaries of computer programs shall be circled, checked, or highlighted to accelerate reviews.

## 2.6 ADDITIONAL REQUIREMENTS

- (1) Equipment and Fixtures. The Contractor shall furnish equipment and fixture schedules, catalog data, applicable Government or Commercial Specification numbers, and indicate sizes, capacities, manufacturer, model numbers, and manufacturer's warranties for all equipment and fixtures. Originals of catalog data (six copies only) shall be submitted in lieu of reproducible or copies to ensure legible data.
- (2) Additional topographic surveys and soils information other than provided in this RFP obtained by the Contractor shall be submitted for review with the other design data. Topographic survey shall include contour lines of sufficient frequency for development of construction plans. Horizontal and vertical control shall be shown. Soil investigations shall include any boring logs, testing results, or design analysis performed.
- (3) Field Trip Report: The electrical engineer and mechanical engineer responsible for the design are required to visit the site and furnish a trip report with the 65% design submittal. During the site visit the responsible electrical engineer and mechanical engineer shall coordinate with the Contracting Officer to obtain the following data from the appropriate base personnel: power system characteristics, communications support items, fire alarm system requirements, EMCS requirements, cathodic protection, and any other items

necessary for the design of supporting services to the facility. The report shall include names and titles of persons contacted and a brief description of all guidance information or instructions received.

- (4) Finishes
  - (a) Exterior Color Board. Two exterior color boards shall be submitted (see color board requirements in specification Section 01001) as part of the 65% Bldg. Design submittal (see paragraph Design Submittals).
  - (b) BRID/FRID: Contractor is required to provide a Building-Related Interior Design (BRID) and a Furniture-Related Interior Design (FRID). Requirements for BRID/ FRID are specified in Engineering Regulation ER 1110-345-122 and Design Guide DG 1110-3-122. Selection of materials must be coordinated with the user prior to the final submission. Heavy or bulky sample s and materials may be presented by clear color photographs, which indicate actual colors and textures. Where special finishes such as metal roof panels are required, small samples shall be attached to the board, and additional samples not less than 12 inches square shall be submitted with the board.
- (5) Architectural Rendering: The Contractor shall prepare color renderings illustrating an exterior view of the project building and site development. The rendering shall be made at eye level and illustrate in an accurate manner, significant architectural features of the proposed project. The name of the project, design firm, and Army project manager are to be engraved or otherwise professionally applied to a small, black metal or plastic plate adhered to the exterior or the glazing near the bottom center. The following formats are to be provided as part of this work:
  - (a) Framed Original Rendering. The original 18"x22-1/2" color rendering having an overall matted dimension of 20"x30". The rendering shall be mounted under non-glare acrylic glazing in sturdy (3/4" minimum) flattop black metal or wood frame, 1 inch deep (wall to face) and with a 1/4 inch to 3/16 inch face depending upon the rendering size. The frame material can be obtained from Nielson Frames, but other manufacturers of the same profile and color are acceptable. The rendering shall be matted with #789; Granite mat board by Bainbridge or a matching colors by another manufacturer. If there is double mats, then the interior mat shall be black, 3/16 to 1/4 inch wide. Install adjustable devices and picture wire for hanging.
  - (b) Unframed Color Print. 16"x20" ektachrome prints of the rendering.
  - (c) Framed Color Print. 16"x20" ektachrome prints of the rendering, matted and mounted under non-glare acrylic glazing in sturdy (3/4" minimum) flattop black metal or wood frame. The framed dimension is to be 20"x25".
  - (d) 35mm color slides of the rendering (2 each).
  - (e) 4"x5" color negatives of the rendering (one each).
  - (f) Electronic images on 3.5" floppy disk in Microsoft Windows BMP format.
  - (g) Distribution: The Contractor shall provide reproduction and direct mailing of the rendering along with the 95% design submittal as specified in the table SPECIFICATIONS AND DRAWINGS DISTRIBUTION in paragraph 1.2.2.

### 3. PHASE I DESIGN SUBMITTAL MATERIAL REQUIREMENTS

#### 3.1 GENERAL. Design reviews will be conducted by the Government for:

- (1) 95% Site, Foundation, and Utilities Design, and 65% Building Design and All Other Work.
- (2) 95% Building Design and All Other Work.

For specific requirements for each percentage stage of design see Seattle District AE Design Guide.

Design submittal schedule and distribution requirements are given in paragraph 1.3 PHASE I - REQUIREMENTS. Requirements for preparation of submittal materials are found in paragraph 2. PREPARATION OF PHASE I PROJECT DESIGN DOCUMENTS. Submittal materials required for the design reviews are as indicated herein.

#### 3.2 SITE, FOUNDATION, AND UTILITIES DESIGN (95%), BUILDING DESIGN and ALL OTHER WORK (65%) SUBMITTALS

- (1) Construction Drawings:
  - (a) Submittal shall include all drawings necessary to fully depict Site, Foundation, and Utilities Design construction requirements developed to 95%.
  - (b) Submittal shall include all drawings necessary to fully depict Building Design and All Other Work developed to 65% completion.
- (2) Specifications:
  - (a) Submittal shall include completed specifications for site, foundation, and utility design developed to 95%.
  - (b) Outline specifications for building design and all other work, including an index, general conditions and all technical sections.
- (3) Design Analysis and Supporting Data:
  - (a) Design analysis with supporting calculation and other data as appropriate to support the 95% site, foundation, and utility design.
  - (b) Design analysis developed to the extent required supporting the other design work included in this submittal.
  - (c) Equipment and Fixture Schedules to support the design work included in this submittal.
- (4) Exterior Color Board and BRID/FRID package, showing colors, materials, textures, finishes, etc. (in accordance with paragraph 2.6 (4) ).

#### 3.3 (95%) BUILDING DESIGN AND ALL OTHER WORK SUBMITTALS

- (1) Construction Drawings: All drawings upgraded to 95 % completion. Incorporate site, foundation, and utility drawings into drawing package for this submittal.
- (2) Specifications: All completed specifications upgraded to 95% to support the completed work.

- (3) Design Analysis and Supporting Data:
  - (a) Design analysis with supporting calculations and other data as appropriate to support the completed work.
  - (b) Equipment and Fixture Schedules catalog data and manufacturer's warranties for all equipment and fixtures.
  - (c) Rendering – direct mailing as specified
- 3.4 REVISED SUBMITTALS: Submit annotated Government review comments from previous submittal. All comments shall be incorporated into the design or rebutted to the satisfaction of the CO.

END OF SECTION



SECTION 00860

STATEMENT OF WORK

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## SECTION 00860

### STATEMENT OF WORK

#### PART I

#### 1. PROJECT SCOPE OF WORK

##### 1.1 GENERAL

1.1.1 This project includes all design and construction necessary to provide a complete and usable Vehicle Maintenance Facility of approximately 6,922 square meters at Fort Lewis, Washington, as described herein. Site development includes utility services, paved access roads and parking areas, landscaping and all other site improvements as described herein. The facility includes four Tactical Equipment Maintenance Buildings (TEMB), designated CSSC, MARC, RSTA and IB. The CSSC and the MARC are vehicle maintenance shops, each with six service bays (three scheduled maintenance and three repair), administrative area, overhead cranes, small items repair area, and parts storage area. The RSTA and IB are single bay maintenance shops. Also included in the project are seven Deployment Equipment Storage Buildings (DESB) of varying sizes. The design of the TEMBs shall follow the Army Standard Design with modifications as shown herein, consistent with the Ft. Lewis Installation Design Guide. All buildings shall employ a pre-engineered structural steel frame. The structures shall utilize two exterior material systems: an integrally colored, split-faced concrete masonry unit (CMU) veneer wall system in the lower portion, and insulated metal wall panels in the upper portion. The roof shall be a standing seam metal roof over rigid polyisocyanurate insulation supported by metal deck. The DESB designs shall be based on generic metal building types. All materials shall be non-combustible, low maintenance, and all structures shall match in color, texture, and pattern. The work includes all utility systems, HVAC and domestic hot water systems, a complete fire protection system, fire detection and reporting system. In addition the work includes the installation of Government furnished equipment as itemized in paragraph 3.2.5 -Government Furnished Items. Sitework includes asphaltic concrete paving, portland cement concrete sidewalks, concrete curbs and gutters, landscaping and irrigation systems, and connection of building utilities to the base utilities systems. The project also includes demolition of antenna foundation and grounding rods, ~~utility poles~~, building foundation, and sidewalk. Determination of existing site conditions, site surveys, Geotechnical investigations, and all other information prerequisite for design and construction of a complete and usable facility and not contained in this Request for Proposal (RFP) are the express responsibility of the Contractor.

NOTE: Wherever the term "Proposer" is used it shall be read as "Contractor" following contract award.

##### 1.2 PROJECT LOCATION AND SITE PLAN

1.2.1 Fort Lewis Army Post is located approximately 5 miles south of the city of Tacoma, Washington. Fort Lewis Area Map and the project location are shown on drawing Plate G-1. Plates C-4 and C-5 show the Vehicle Maintenance Facility site concept layout and adjacent buildings, and Plates C-6 and C-7 show site utility improvements in relationship to the existing site features.

#### 2. CODES AND STANDARDS

##### 2.1 GENERAL

2.1.1. The project shall be designed and constructed in accordance with the applicable codes, standards, design parameters and regulations as noted in this section or other sections of this RFP. In case of conflict between these requirements the most stringent requirement shall apply.

2.1.2 Reference to standard specifications of any technical society, organization, or association, or to codes, manuals, or regulations of Federal, State, or local authorities, shall mean the latest standard, code,

manual, regulation, specification, or tentative specification adopted and published at least 90 days prior to submittal of proposals, unless specifically stated otherwise.

2.1.3 When any code or standard listed below references the authority having "jurisdiction" or "governmental authority" this reference shall be interpreted as referring to the Contracting Officer (CO).

2.1.4 Throughout this RFP reference is made to the "Fort Lewis Installation Design Guide". This manual presents the Post's design philosophy and provides the framework within which this RFP was prepared. It is available at <http://pwcad.lewis.army.mil/standards/refman.cfm>. This web site is only accessible through the Seattle District web site

<http://www.nws.usace.army.mil/>

then "Design Criteria", "Fort Lewis", "Facility Design Policy/Base Design Standards", and "Reference Manual."

In addition, the design and construction of the Vehicle Maintenance Facility has to comply with the following design guides and construction standards, available as noted below:

Military Handbook 1013/1A Design Guidelines for Physical Security of Facilities.

[http://www.efdlant.navfac.navy.mil/criteria/publications\\_15.htm](http://www.efdlant.navfac.navy.mil/criteria/publications_15.htm)

DOD 5200.1-R, Appendix G Physical Security Standards

[http://www.fas.org/irp/doddir/dod/5200-1r/appendix\\_g.htm](http://www.fas.org/irp/doddir/dod/5200-1r/appendix_g.htm)

TM 5-853 – Security Engineering, Vol. I, II, and III.

<http://www.usace.army.mil/inet/usace-docs/armytm/>

DOD Antiterrorism/Force Protection Interim Construction Standards, 16 Dec 99

<http://www.mil.acc.af.mil/ce/cepc>

Sustainable Project Rating Tool (SPiRiT) – COE publication

<http://www.usace.army.mil/inet/usace-docs/eng-tech-ltrs/etl1110-3-491/toc.htm>

## 2.2 BASIC REQUIREMENTS

2.2.1 General: Design and construction shall be in accordance with the following codes, standards, and regulations. The most stringent shall govern when discrepancies occur. Except as noted otherwise, most of the referenced publications are available on the Internet through the Corps' Seattle District website at <http://www.nws.usace.army.mil/> under "Construction" and "Design Criteria". Another source is Construction Criteria Base (CCB) library at <http://www.ccb.org>. Those not available through a website, or explicitly from the Corps of Engineers, are available in hardcopy format from the publishing agency. It is the Contractor's responsibility to procure these documents.

- (1) Building Code: International Building Code (IBC), (2000).
- (2) Mechanical Code: Uniform Mechanical Code (UMC), latest edition.
- (3) Plumbing Code: National Standard Plumbing Code (NSPC), latest edition.
- (4) Electrical Codes: National Electrical Code, (1999). National Electrical Safety Code, latest edition.
- (5) National Fire Protection Association Fire Codes (NFPA), latest editions as specified.
- (6) Life Safety Code: National Fire Protection Association, NFPA 101 (2000).
- (7) MIL-HDBK-1008C, Fire Protection for Facilities. Requirements of this handbook shall govern over other standards for fire protection and life safety and 3.6 FIRE DETECTION REQUIREMENTS

- (8) MIL-HDBK-1190 - Facility Planning and Design Guide.
- (9) Uniform Federal Accessibility Standards (UFAS - 49FR 31528).
- (10) Americans With Disabilities Act Accessibility Guidelines (ADAAG).
- (11) Technical Instruction TI 800-01 - Design Criteria (1998).
- (12) Technical Instruction TI 800-03 - Technical Requirements for Design-Build (1998)
- (13) Seattle District AE Design Guide (1990)
- (14) Fort Lewis Design Standards (draft) (under "Facility Design Policy/Base Design Standards").
- (15) Engineer Technical Letter ETL 1110-3-491 - Sustainable Design for Military Facilities (2001). Design to achieve SPIRiT "Bronze" level.

#### 2.2.2 Civil:

AWWA Manual C-65.

Stormwater Manual, Fort Lewis Public Works (1996) (at Facility Design Policy/Base Design Standards under "Reference Manual")

Design criteria for pavement design shall be in accordance with the criteria specified in the attached Geotechnical Report and paragraph 3.1 CIVIL DESIGN REQUIREMENTS, (6) Parking.

#### 2.2.3 Landscape:

TM 5-803-13 - Landscape Design and Planting - Criteria

TM 5-803-5 - Installation Design

Fort Lewis Landscape Development Plan, Volume II (available at "Facility Design Policy/Base design Standards", under "Reference Manual")

#### 2.2.4 Structural:

Structural design shall comply with the requirements of the latest editions of the codes, standards, and specifications listed in Chapter 8 of Technical Instructions (TI 800-01 dated 20 July '98). Structural Design shall also comply with the following:

- (1) Metal Building Manufacturers Association (MBMA), "Low Rise Building System Manual."
- (2) MIL-HDBK 1013 1A Design Guidelines for Physical Security of Facilities
- (3) CMAA #70 and #74 (1994)
- (4) UFC 3-310-01 Load Assumptions for Buildings (replacing TI 809-01), available at [www.hmd.usace.army.mil/techinfo/engpubs.htm](http://www.hmd.usace.army.mil/techinfo/engpubs.htm)
- (5) See paragraph 3.3, STRUCTURAL REQUIREMENTS for specific structural design requirements including seismic regulations.

#### 2.2.5 Architectural:

- (1) Architectural design shall conform to the guidance furnished in this RFP (3.2 ARCHITECTURAL REQUIREMENTS and ARCHITECTURAL DESIGN), shall be in accordance with the above-mentioned criteria, and compliant with the Fort Lewis Installation Design Guide.
- (2) The choice of exterior colors, finishes and materials for this facility shall be in agreement with the guidance furnished herein.
- (3) Interior Design: A Building-Related Interior Design (BRID) and a Furniture-Related Interior Design (FRID) shall be prepared in accordance with the requirements of Engineering Regulation ER 1110-345-122 and Design Guide DG1110-3-122. Both documents are available through <http://www.usace.army.mil/inet/usace-docs/>. Submittal shall be made as part of the 65% and 95%

design submittal. Selection of the materials shall be coordinated and approved with the users prior to the final submission. Submittal documents are to be formatted for an 8½ " X 11 " three-ring binder. Binders to be hard cover with slip jacket for cover and spine identification.

(4) Life Safety design shall be in accordance with NFPA 101 Code for Safety to Life from Fire in Buildings and Structures, MIL-HDBK-1008C and the guidance furnished herein.

#### 2.2.6 Mechanical:

All mechanical equipment provided and furnished shall be installed so that it is easily accessible for maintenance and repair or replacement. It shall be in compliance with local codes and ordinances, the Uniform Mechanical Code (UMC), the applicable codes and standards of the National Fire Protection Association (NFPA) and Underwriters Laboratories (UL), and the criteria and requirements specified in this RFP. Access to mechanical rooms shall be from exterior of the buildings. Refer to paragraph 3.4 MECHANICAL REQUIREMENTS.

#### 2.2.7 Electrical:

Electrical wiring shall comply with the current regulations of the National Electrical Safety Code, National Electrical Code, National Fire Protection Association Life Safety Code, and the criteria and requirements specified in this RFP. Equipment shall conform to the requirements of the Institute of Electrical and Electronics Engineers, American Standards Association, National Electrical Manufacturers Association and Underwriters Laboratories, Inc. Refer to requirements of paragraph 3.5 ELECTRICAL DESIGN REQUIREMENTS.

#### 2.2.8 Fire Protection/Detection:

Fire protection shall be provided by an approved automatic sprinkler system incorporating a complete wet pipe system to protect all areas of the facility. Fire detection and additional fire protection requirements are specified in paragraphs 3.4.16 Fire Protection/Detection, and 3.6 FIRE DETECTION REQUIREMENTS.

SECTION 00860  
STATEMENT OF WORK  
PART II

3. DESIGN DEVELOPMENT TECHNICAL REQUIREMENTS

3.1 CIVIL DESIGN REQUIREMENTS

3.1.1 Civil design and construction shall be in accordance with the applicable requirements of paragraph 2. CODES AND STANDARDS and other requirements as stated herein.

3.1.2 Site Planning:

- (1) General. Contractor's operations shall at all times take into consideration that other facilities adjacent to the project must remain operational and be minimally impacted during the performance of the work. For additional information concerning coordination of work and access to the site see Section 01005 Site Specific Supplementary Requirements.
- (2) Site Plan. Plates C-4 and C-5 show the site plans, which is a preconcept design solution. Proposers are to develop the site design while meeting the criteria stated herein. Innovative, creative, and/or cost saving proposals, which fulfill these criteria, are encouraged and will be evaluated accordingly.

3.1.3 Site Design:

- (1) General Site Requirements. Overall site design shall conform to the guidance provided herein.
  - (a) The design shall present a consistent and unifying theme, tying together the various elements of the entire complex.
  - (b) The Contractor shall confine all proposed demolition and replacement operations to be within the project boundaries indicated on the attached drawings. Under no circumstances shall the Contractor perform any work off the site, except as authorized in the RFP or in writing by the Contracting Officer (CO). Required utility connections are an exception to this requirement.
  - (c) All survey control shall be based on the nearest Corps of Engineer's benchmarks. All existing survey monuments that are disturbed, lost or destroyed during demolition or construction shall be the responsibility of the Contractor and replaced in kind by a land surveyor registered in the State of Washington.
  - (d) Site design shall consider vehicular and pedestrian circulation, service vehicle, and vehicular parking as shown.
  - (e) All utility lines installed shall have a plastic marker tape (minimum 150 mm wide by .01 mm thick) installed as needed. The plastic marker tape shall include a metallic wire for detection purposes and shall bear a continuous printed inscription describing the type of utility line buried below. Utility line monument markers (concrete with brass identification plugs) shall be installed every 60 meters along straight runs and at each change of direction.

- (f) Protect existing utility lines when new pavements are constructed over them. Existing cover over utilities shall be maintained. If existing cover is not maintained over pipes, the pipe and/or cover shall be redesigned and constructed for HS-20 loading.
- (g) Site design (including landscaping) shall meet the Department of Defense Antiterrorism/Force Protection Standards.

(2) Storm Drainage/ Grading

- (a) Minimum grades for surface drainage shall conform to the guidance provided in the Geotechnical Report (see Appendix B). Provide adequate slope away from buildings to avoid ponding. Areas that cannot be adequately sloped shall have catch basins installed to drain water to a storm sewer system. Design and install storm sewer inlets and lines, as needed, to connect to the existing Ft. Lewis storm sewer system.
- (b) Surface runoff generated from construction of this facility and future work shall be retained on the project site, or removed by use of existing storm sewer line as indicated.
- (c) Catch basin grates shall be bicycle proof design.
- (d) Cut and fill material shall be balanced within the site as much as possible to minimize import and export of material.
- (e) Locate catch basins and grates so that no collection swales allow water to flow across a street or sidewalk to reach a storm sewer.
- (f) The downspouts shall be connected by new lines to the storm drain system.

(3) Water Distribution

- (a) Contractor shall provide looped water system for present construction. Existing water lines are shown on the drawings. It is the Contractor's responsibility to determine that water distribution lines are of adequate size to satisfy normal water demands for the facility, plus fire protection flow requirements. Water demand shall be in accordance with Mil Handbook 1008C, NFPA 13 (1999 Edition) and local standards and codes.
- (b) Water pressure and flow taken at the street hydrant at the intersection of East Drive and D Street is shown in the table below. The Contractor shall verify flow tests to determine that adequate pressures and flows are available. The Contractor shall design and construct water supply lines to meet project requirements.

Flow test taken by Ft Lewis Fire Dept 3/27/00			
		Pressure	
Hydrant Location	Pipe Size (inches)	Static (psi)	Residual (psi) @ Flow (gpm)
East Drive & D Street	8	78	60 @ 1,300

- (c) The Contractor's worst-case test results shall be used to design the fire protection system. The design should include additional consideration for concurrent demands



on main line water resources for adjacent property irrigation during the summer months.

- (d) Curb stops shall be provided for all water service lines. Service boxes shall be provided for all curb stops and shall extend to finished grade. The facility shall be provided with an interior service main cutoff-valve. Service lines shall be protected from freezing.

#### (4) Sanitary Sewer

- (a) Sanitary sewer design, construction and leakage testing shall conform to the National Standard Plumbing Code published by NAPHCC. Pipe materials and joints shall conform to the applicable ASTM, ANSI or other Standard as appropriate.
- (b) The Contractor shall design and construct new pipes and required appurtenances to connect to the existing system.
- (c) Manholes shall be placed at all angles and intersections. All sanitary sewers shall have straight alignment between manholes.
- (d) The Contractor shall coordinate all work on existing sanitary sewer lines with the CO.
- (e) Design new lines for a minimum of 0.6 meter per second for average flow.
- (f) Manhole covers located in pavements shall be designed for HS-20 design loading.
- (g) A duplex pump lift station shall be provided to pump effluent from the infantry battalion buildings (new and future) to discharge into the existing sanitary sewer in East Drive.

#### (5) Natural Gas Distribution

The buildings shall use natural gas-fired equipment for space heating. Contact person for the gas company (Puget Sound Energy) is Steve Gray Cheryl Papas at (253) 476-6315. The Contractor shall contract Puget Sound Energy Services to design, install and own meter set assemblies and underground natural gas piping to the buildings. The Contractor shall provide the gas piping system from the point of delivery, defined as the outlet of the meter set assembly as provided by Puget Sound Energy Services. For bidding purposes, the Contractor shall assume a value of \$100,000 for services supplied by Puget Sound Energy Services. The Government shall reimburse the Contractor for Puget Sound Energy Services in excess of the specified amount. The Contractor shall reimburse the Government if Puget Sound Energy Services are less than the specified amount.

#### (6) Propane Distribution

~~A propane mixing station (facility) is located adjacent to this project. Propane is mixed with air to deliver heat content equivalent to natural gas. This back-up fuel source shall permit the facilities to obtain interruptible natural gas rates.~~ The Contractor shall provide piping (separate from the natural gas piping to be installed by PSE) as indicated on the drawings from the point of connection (see civil drawings) ~~to each building~~. Isolation valves shall be provided to permit manual connection of the propane system to the building natural gas system. The propane piping shall tee into the natural gas piping between the natural gas meter and prior to entering the building.

(7) Parking

Reference TI 804-11 "POV Site Circulation and Parking" and the following:

- (a) Plate C-4 and Plate C-5 are representative of the general requirements for parking lot access and the proposer is responsible to develop the plan and incorporate the requirements stated herein.
- (b) Pavements for parking areas and access roads shall be asphaltic concrete and are to be in accordance with the requirements specified in the Geotechnical Report.
- (c) Roads and parking areas shall have gradients of a maximum 5 percent and a minimum of 1 percent. Grade to avoid ponding.
- (d) Curbs of portland cement concrete shall be provided at all pavements and shall comply with the curb design details provided in Ft. Lewis Engineering Standards.
- (e) Pavement markings shall conform to outline specification 02763 and the following: All passenger vehicle parking areas shall be marked with single 100 mm parking stripes. Handicapped painted symbols and signage will be required at all barrier-free parking spaces.
- (f) Design Vehicle: The light armored vehicle was selected for parking lot design. The vehicle is 6.93 meters long, 2.66 meters wide, and weighs 16,300 kilograms.
- (g) Pavement Design: Design of pavements shall be based on evaluation of existing conditions, anticipated loadings over the service life, and other relevant requirements. Minimum requirements for perimeter road is H-20 loading.
- (h) Handicapped stalls and access to buildings shall be as per Americans with Disabilities Act (ADA) guidance. Handicapped parking and access illumination shall be 50 lux average.
- (i) Landscape in parking areas. Landscaping shall be provided in the parking areas as indicated on the site plan. Existing trees shall be preserved where possible, as indicated on the site plan. For additional landscape requirements, see Para. 3.1.4.

(8) Soil Compaction.

Soil compaction shall be achieved with equipment suited to the particular soil being compacted. Material shall be moistened or aerated as necessary to provide the moisture content that will readily facilitate obtaining the compaction specified with the equipment used. Each layer of material shall be compacted to not less than the percentage of maximum density specified in the Geotechnical Report.

3.1.4 Landscape Design and installation

(1) General.

A complete, integrated landscape planting plan shall be developed by a registered landscape architect, familiar with local conditions and plant species, and experienced in site planning and planting design. The designer shall insure that sound design principles for selecting and locating plant materials are employed to enhance the character of the site by enhancing the streetscape, lessening the visual impacts of parking and other less desirable areas, and blending with the landscape theme presented in the North Fort area. Landscape design and installation shall follow the guidance provided in Section 00860 Part 1, Para. 2.2.3.

(2) Landscape Design Objectives

- (a) Enhancing the streetscape along East Drive.
- (b) Provide native planting along North Gate Road.
- (c) Providing erosion control and site stabilization. No landscaping shall be provided inside of the perimeter or security fences, except for around the retention pond area. All areas disturbed due to Contractor activities, such as staging and storage areas, shall be restored to existing conditions at Contractor's expense. Grass areas shall be restored and seeded in accordance with specification section 02921.

(3) Planting

Streetscape planting along major roads and POV parking shall be provided as generally indicated on the concept site plans. Landscaping, including topsoil, grass seeding, and native planting shall be provided outside of the perimeter or security fences to provide erosion control/restoration of disturbed areas, roadside ditches, and swales and to blend to surrounding natural areas. Native planting other than grasses shall be provided where seeding is not determined to be sufficient for soil stabilization. Planting at the intersection of East Drive and Northgate Road shall be designed for safe sight distances by vehicles.

- (a) Existing trees and significant vegetation shall be preserved and protected where feasible. Existing vegetation to be preserved shall be as indicated on the conceptual site plan.
- (b) New landscaping shall meet all anti-terrorism and force-protection criteria. New landscaping shall also integrate sustainable principles into the design and construction of the project. Plant material selection shall include primarily natives and ornamentals that are drought-tolerant once established and require no chemical treatment on a regular basis.
- (c) New trees shall not be installed within 6M of any new or existing underground utility lines.

(4) Topsoil and Grass Seeding.

All disturbed areas within the clearing and grubbing limits and outside paved, rock-mulched, or developed areas of the project ~~will~~shall receive topsoil and be seeded to low-maintenance field/native grass mixes as recommended in the Fort Lewis design standards. Topsoil shall be stripped from existing landscaped areas prior to construction activities, then screened and amended, as required, for reuse in new landscaped areas. If stripped material is not sufficient, the CONTRACTOR ~~will~~shall obtain additional topsoil from off-site. Excess topsoil shall be disposed of on-site as directed by the Contracting Officer Representative. Topsoil shall be spread over prepared sub-grades to a minimum compacted depth of 100mm. Finished grades shall be hydroseeded and mulched. A 3-month minimum maintenance period will be required to ensure a satisfactory stand of turf. Heavily compacted soils or sterile gravels found within the areas to receive new landscaping shall be removed to a minimum depth of 300 mm and replaced with satisfactory fill to match adjacent elevations and avoid depressions prior to placing topsoil and seeding. Areas seeded to field/native grasses shall not require a permanent irrigation system.

(5) Streetscape and POV Parking Area.

Street trees ~~will~~shall be planted between East Drive and the Vehicle Maintenance Facility and in the proposed POV parking area. Existing trees located along East Drive ~~will~~shall be

preserved , where possible. An automatic underground irrigation system shall be provided for all parking lot, street tree, and streetscape plantings, including turf areas between East Drive and the POV parking area. An exterior irrigation controller shall be provided in the location as indicated approximately on the drawings.

(6) Native Planting along North Gate Road.

Native planting consisting primarily of shrubs and groundcovers shall be provided along North Gate Road as indicated on the drawings. Minimal trees shall be provided within the native planting area for scale and visual variety. Trees, shrubs, and groundcovers shall be native or indigenous and shall be selected for drought-tolerance and low-maintenance, as well as aesthetics. Irrigation for the native plantings shall consist of a drip system to aid in the establishment of the plantings during the first two to three seasons.

(7) Landscape Irrigation Systems.

An automatic underground irrigation system shall be provided for all new plantings (trees, shrubs, and groundcovers) provided within the project site, excluding turf areas. Irrigation systems shall be designed by a landscape architect, certified irrigation designer, or engineer with a minimum of two years experience in similar irrigation design projects. The irrigation systems shall utilize potable water and be well coordinated with other utilities. All irrigation systems shall have proper backflow prevention devices at the point of connection to the domestic water system and be in compliance with local codes. Irrigation systems shall be designed for water conservation and ease of maintenance by operation and maintenance personnel.

### 3.2 ARCHITECTURAL REQUIREMENTS

#### 3.2.1 Design Criteria

The architectural design of the Tactical Equipment Maintenance Buildings (TEMB) (designated CSSC, MARC, RSTA and IB) shall be modified versions of the Department of the Army Standard Design for Tactical Equipment Maintenance Facilities with varying degrees of customization. The RFP schematic designs show the following composite types:

- (a) CSSC: "Building 3" Repair and Scheduled Maintenance Bays with "Building 2" Administrative Core (with increased size in "Communications" and "Break, Training and Conference" rooms).
- (b) MARC: "Building 3" Repair and Scheduled Maintenance Bays with "Building 1" Administrative Core (with "General Item Repair" and combination "Weapons and Comsec Vault" rooms deleted, space absorbed by "Break, Training and Conference" room.)
- (c) RSTA and IB: "Building 1" (with one Bay deleted and the Administrative Core redesigned to accommodate four (4) combination "Weapons and Comsec Vaults" at the IB building and five (5) combination vaults at the RSTA building.

Proposals shall adhere to the requirements of the Standard Design, except as revised or expanded by the criteria identified in this RFP.

Associated with the TEMB's are various sizes of Deployment Equipment Storage Buildings (DESB). The RFP schematic designs for these structures are based on generic, pre-engineered metal building typologies. Army Standard Designs do not exist for these structures.

In addition to the criteria listed in the Standard Design and this RFP, proposed designs shall comply with the International Building Code (IBC) 2000 edition, the National Fire Protection

Association (NFPA) Life Safety Code, 2000 edition, and the Military Handbook "Fire Protection for Facilities Engineering, Design and Construction", MIL-HDBK-1008C. Where conflicts exist, the most conservative requirements shall govern.

### 3.2.2 Functional Description

Intended to serve the organizational maintenance needs of the Interim Brigade Combat Team (IBCT), these facilities will be used to service and repair tactical wheeled vehicles. Military personnel will work in the CSSC, RSTA, and IB buildings. Civilian personnel employed by a civilian contractor will staff the MARC. A standard design Administrative Core module shall occupy one end of each facility, with combinations of Scheduled Maintenance and Repair Bays extending away from the core. All service bays are single story spaces with sufficient height to accommodate an overhead bridge crane, building service mechanical equipment and bay lighting.

#### (1) Typical functions

- (a) CSSC functions include vehicle inspection, preventative maintenance, limited diagnostic analysis, some welding and spot painting, light body work, repair of direct exchange modules, replacement or repair of direct exchange systems, major component repair, and transfer of end items to direct support maintenance. Facility functional spaces include open bays served by a 10 metric ton capacity bridge crane (repair bays) and a 5 metric ton capacity bridge crane (maintenance bays), bay support, administration, shop control, storage, tool room, parts room, weapons vault, comsec vault, latrines with shower and locker areas, a break/training/conference room, janitor closet, and building support mechanical, electrical, and communications spaces.
- (b) The MARC will be used for scheduled maintenance activities such as fluid changes, lubrication and limited parts replacement. Facility functional spaces include open bays served by a 10 metric ton bridge crane (repair bays) and a 5 metric ton capacity bridge crane (maintenance bays), administration, storage, tool room, parts room, latrines with shower and locker areas, a break/training/conference room, janitor closet, and building support mechanical, electrical, and communications spaces.
- (c) RSTA and IB facilities will be used only for daily vehicle inspections and fluid top off. Facility functional spaces include a single open bay (without bridge cranes), administration, storage, multiple combined weapons and comsec vaults, latrines, janitor closet, and building support mechanical, electrical, and communications spaces.
- (d) DESB buildings provide weather protection for basic storage of materials. These facilities are unheated and not insulated. Access is by personnel only; there are no operational requirements for forklift or vehicle access into these structures. DESB structures are subdivided with partitions of chain link fencing to provide segregated, secured storage for each unit. DESB facilities also feature a raised curb at the perimeter of the floor slab to reduce the intrusion of surface water.

#### (2) Gross floor areas

CSSC, MARC, RSTA, and IB gross floor areas vary because of the different occupancies and operations in each building. The RFP schematic designs indicate approximate gross areas of 1 948 square meters for the CSSC, 1 723 square meters in the MARC, 642 square meters in the RSTA and 597 square meters in the IB. The design shall provide a distribution of space and equipment as described in this RFP (see Space Requirements tabulation at paragraph 3.2.3) and delineated in the Standard Design. A significant change

to the Standard design at CSSC and MARC is the elimination of the Warehouse modules. A fluid storage room has also been added to the CSSC and MARC to accommodate fluid dispensing and recycling requirements.

The RSTA and IB buildings are significantly altered from the standard design due to the deletion of a repair bay and reconfiguration of the administrative area to accommodate multiple combined weapon and comsec vaults (5 at RSTA, 4 at IB).

Gross floor areas of the DESB structures range from 162 square meters to 488 square meters with a total floor area required at this facility of approximately 2 012 square meters.

### 3.2.3 Space Requirements

#### (1) Definitions

**Net Areas:** the clear area measured to the inside face of the room walls available for freestanding furniture, tables, and equipment.

**Gross Building Area:** the entire plan area of each floor measured from the outside edges of exterior walls. Include all walls, shafts and open areas (such as stairs). Also include any covered, but not enclosed exterior areas, such as covered entrances with floor area counted at 50% of actual area. Cantilevered roof overhangs are not included.

#### (2) Tables

Design standards for the TEMB include requirements for both net and gross areas. Tables 1 through 5 identify the specific area requirements for this project. See tables on following pages.

Table 1: CSSC Space Requirements		
Functional Area	RFP Schematic Net Area (sf)	RFP Schematic Net Area (m <sup>2</sup> )
Repair Bays (total of 3)	6,196.55 sf	575.62 m <sup>2</sup>
Scheduled Maintenance Bays (total of 3)	6,196.55 sf	575.62 m <sup>2</sup>
Circulation Bays (total of 2)	968.42 sf	89.96 m <sup>2</sup>
Fluid Storage	1,088.99 sf	101.16 m <sup>2</sup>
General Item Repair	394.32 sf	36.63 m <sup>2</sup>
Compact Item	251.15 sf	23.33 m <sup>2</sup>
Prescribed Load List (PLL) Storage	147.27 sf	13.68 m <sup>2</sup>
Repairable Exchange and Technical Supply (RX/TS) Storage	228.65 sf	21.24 m <sup>2</sup>
Tool Room	118.63 sf	11.02 m <sup>2</sup>
Tool Box Storage	43.71 sf	4.06 m <sup>2</sup>
Comsec Vault	253.62 sf	23.56 m <sup>2</sup>
Weapons Vault	253.62 sf	23.56 m <sup>2</sup>
Men's Latrine & Locker Room	608.98 sf	56.57 m <sup>2</sup>
Women's Latrine & Locker Room	198.08 sf	18.40 m <sup>2</sup>
Mechanical Room	475.81 sf	44.20 m <sup>2</sup>
Electrical Room	111.96 sf	10.40 m <sup>2</sup>
Communications Room	116.26 sf	10.80 m <sup>2</sup>
Janitor Closet	33.59 sf	3.12 m <sup>2</sup>
Corridor	874.44 sf	81.23 m <sup>2</sup>
Break/Training/Conference Room	422.42 sf	39.24 m <sup>2</sup>
Storage	73.63 sf	6.84m <sup>2</sup>
Administration	503.80 sf	46.80 m <sup>2</sup>
Total Net Floor Area	19,560.33 sf	1,817.03 m <sup>2</sup>
Gross Building Area	20,964.84 sf	1,947.50 m <sup>2</sup>

Table 2: MARC Space Requirements		
Functional Area	RFP Schematic Net Area (sf)	RFP Schematic Net Area (m <sup>2</sup> )
Repair Bays (total of 3)	6,196.55 sf	575.62 m <sup>2</sup>
Scheduled Maintenance Bays (total of 3)	6,196.55 sf	575.62 m <sup>2</sup>
Circulation Bays (total of 2)	968.42 sf	89.96 m <sup>2</sup>
Fluid Storage	1,088.99 sf	101.16 m <sup>2</sup>
Prescribed Load List (PLL) and Repairable Exchange and Technical Supply (RX/TS) Storage	296.47 sf	27.54 m <sup>2</sup>
Tool Room	69.76 sf	6.48 m <sup>2</sup>
Tool Box Storage	69.76 sf	6.48 m <sup>2</sup>
Men's Latrine & Locker Room	248.78 sf	23.11 m <sup>2</sup>
Women's Latrine & Locker Room	224.34 sf	20.84 m <sup>2</sup>
Mechanical Room	265.25 sf	24.64 m <sup>2</sup>
Electrical Room	92.36 sf	8.58 m <sup>2</sup>
Communications Room	58.78 sf	5.46 m <sup>2</sup>
Janitor Closet	20.67 sf	1.92 m <sup>2</sup>
Corridor	667.32 sf	61.99 m <sup>2</sup>
Break/Training/Conference Room	682.07 sf	63.36 m <sup>2</sup>
Administration	287.21 sf	26.68 m <sup>2</sup>
Total Net Floor Area	17,433.27 sf	1,619.44 m <sup>2</sup>
Gross Building Area	18,548.53 sf	1,723.20m <sup>2</sup>



Table 3: RSTA and IB Space Requirements (areas are indicated for one building - two are required)		
Functional Area	RFP Schematic Net Area (sf)	RFP Schematic Net Area (m <sup>2</sup> )
Scheduled Maintenance Bay	2,064.19 sf	191.75 m <sup>2</sup>
Circulation Bay	462.90 sf	43.00 m <sup>2</sup>
Storage	299.70 sf	27.84 m <sup>2</sup>
Weapons and Comsec Vaults (total of 4)	1,119.56 sf	104.00 m <sup>2</sup>
Men's Latrine & Locker Room	179.78 sf	16.70 m <sup>2</sup>
Women's Latrine & Locker Room	148.34 sf	13.78 m <sup>2</sup>
Mechanical Room	226.82 sf	21.07 m <sup>2</sup>
Electrical Room	74.28 sf	6.90 m <sup>2</sup>
Communications Room	58.78 sf	5.46 m <sup>2</sup>
Janitor Closet	20.67 sf	1.92 m <sup>2</sup>
Corridor	792.09 sf	73.58 m <sup>2</sup>
Administration	287.21 sf	26.68 m <sup>2</sup>
Total Net Floor Area (IB)	5,734.30 sf	532.68 m <sup>2</sup>
Gross Building Area (IB)	6,426.70 sf	597.00 m <sup>2</sup>
Weapons and Comsec Vaults (1 add'l at RSTA)	279.89 sf	26.00 m <sup>2</sup>
Corridor (additional area at RSTA)	159.21 sf	14.79 m <sup>2</sup>
Total Net Floor Area (RSTA)	6173.40 sf	573.47 m <sup>2</sup>
Gross Building Area (RSTA)	6,911.13 sf	642.00 m <sup>2</sup>

Table 4: DESB Space Requirements (Total of 7 buildings required)		
Facility Supported	RFP Schematic Net Area (sf)	RFP Schematic Net Area (m <sup>2</sup> )
CSSC, Engineer, Signal and Military Intelligence Companies (1 building each unit)	( each) 1743.93 sf	( each) 162.0 m <sup>2</sup>
Brigade HHC	4521.30 sf	420.0 m <sup>2</sup>
Infantry Battalion	4908.84 sf	456.0 m <sup>2</sup>
RSTA	5253.32 sf	488.0 m <sup>2</sup>
Gross Area (all buildings)	21,659.18 sf	2,012.0 m <sup>2</sup>
RSTA optional fifth bay	1313.33 sf	122.00 m <sup>2</sup>
Gross Area (all buildings + option)	22,972.51 sf	2,134.00 m <sup>2</sup>

### 3.2.4 Specific Functional Area Requirements

Basic descriptions of the various functional areas contained in the TEMB's are outlined below. Due to the variety of operational requirements, some of the listed areas are not included in every building. Room sizes and configurations also vary between buildings. Refer to the space tabulations in this section and the various drawings included with this RFP for specific definition of building/room adjustments.

#### (1) Repair Bays

Repair bays will be used for the repair and servicing of wheeled vehicles, construction equipment and large power generation equipment. All bays are configured to provide for drive through accessibility, with overhead coiling doors at both ends of the bay. Bays are sized to permit simultaneous occupancy by up to four vehicles. A continuous, grated, trench drain shall be installed inside all overhead doors. All repair bays in the CSSC and MARC shall be served by a single, trolley type, underslung bridge crane with 10 metric tons capacity. This is an increase from the standard design crane capacity of 5 metric tons. No crane is required in the RSTA and IB buildings. To eliminate the build up of vehicle exhaust, a dedicated exhaust removal system shall be provided with a coiling exhaust pipe connection on each side of every bay (see drawing A-8). Floor slopes in repair bays shall be consistent with the use of mobile, independent hydraulic lifts.

#### (2) Scheduled Maintenance Bays

All components required of the Repair Bays (except for crane size) shall also be provided for the Scheduled Maintenance Bays. The Maintenance Bays shall be served by a 5 metric ton bridge crane. This crane shall be separate and independent of the Repair Bays crane. The 10 and 5 ton cranes shall access and service only their respective areas of the building. At the end wall Scheduled Maintenance Bay, provide sloped floors with floor drains to collect wastewater from limited engine or vehicle cleaning operations. General

vehicle washing will not be performed at this location. A combined emergency shower and eyewash station shall also be included in the end bay immediately adjacent to end wall of the building. Floor slopes in maintenance bays shall be consistent with the use of mobile, independent hydraulic lifts.

(3) Circulation Bays

Circulation Bays shall be included to provide code required defined paths of egress from the maintenance, service and repair functional areas. No required path of egress from the administrative core portion of any facility shall be routed through a Circulation Bay. The exit and circulation bay locations indicated on the RFP drawings shall be maintained. Primary function of these spaces is to create a pathway clear of vehicles, tools and equipment. A combined emergency shower and eyewash station shall be included in the circulation bay immediately adjacent to the administrative core.

(4) Administration

This space shall provide an open office work area for foremen, production control, and clerical personnel. Each occupant is allotted approximately 8 square meters for personal workstation, with an additional 4 square meters for circulation. The number of modular workstations varies with the function and occupancy of each building. The Administration area shall have a viewing window to the service bays. This space shall be fully enclosed and capable of being secured from the rest of the building.

(5) Compact Item Repair

The area for compact item repair provides for the organizational maintenance of radios, telephones, small switchboards and personal computers. The area shall accommodate three GFCI work benches with associated storage equipment. A full height wire mesh partition shall subdivide the room shared with General Item Repair.

(6) General Repair

Space is provided for repair of fabric, small generators, fuel and electrical systems, quartermaster and chemical equipment such as mess kits, gas masks, heaters, laundry machines, bakeries, smoke generators, liquid dispensing equipment and decontamination equipment. The area shall accommodate three GFCI work benches with associated storage equipment. General Repair shall be co-located with Compact Item Repair, yet separately accessed and secured.

(7) Tool Room

The tool room shall be designed for issue and secure storage of common tool kits shared by shop personnel. This area is co-located with Tool Box Storage described below, but is separated by wire mesh partitions so that it can be secured separately. One person, a "tool keeper," will occupy the room.

(8) Tool Box Storage

Tool Box Storage provides for issue and secure storage of tool kits used by personnel working inside and outside (contact teams) the shop. Access to the Tool Box is by a personnel door separate from the Tool Room.

(9) Repairable Exchange and Technical Supply (RX/TS)

This area is utilized for the temporary storage of items and components that do not function, but are repairable and will be exchanged for new items. Another function is the storage of parts ordered on an as-needed basis from the supporting DS activity. The

RX/TS area includes a GFCI component exchange (RX) counter with racks, shelves, and floor area for the turn-in and issue of repairable items through the repairable exchange process. Shelving or cabinetry (also GFCI) will support other storage requirements of technical supply (TS). In the CSSC, the RX/TS is co-located with the PLL, yet separated by a wire mesh partition to maintain distinct access and security. In the MARC, RSTA and IB buildings the RX/TS and PLL share a common location.

(10) Prescribed Load List (PLL) Storage

Space is provided for storage of prescribed load list (PLL) items, which are parts kept in stock at all times because of demand supporting their inventory or management decisions by maintenance personnel. The PLL area is primarily for storage of shop stock for organizational maintenance. In the RSTA and IB buildings the area functions as a miscellaneous storage room.

(11) Latrines, Showers, and Lockers

Latrine facilities in the CSSC and MARC shall be designed consistent with the modified standard design layouts as indicated in the drawings. The latrines in the RSTA and IB buildings have been modified to delete the shower and locker areas that are unnecessary in these buildings. For design purposes the ratio of male to female occupants is established as 9 to 1.

(12) Janitor Closet

Janitor closets shall provide space for janitorial equipment and supplies as well as general building storage. Mop sink, mop holders, and shelving units shall be supplied for maintenance and general cleaning of the facility.

(13) Break/Training/Conference Area (BTC)

This multi-purpose area is utilized for work breaks, training and conferences. The primary purpose is for meal and break preparation and seating. To support that function the room shall include a unit kitchen or built in cabinetry and appliances. Appliances shall include a refrigerator (GFCI), a microwave oven (GFCI), and a sink. If sufficient wall space is available a range shall also be incorporated. Dedicated space for one (soft drink) vending machine (NIC) is preferred, but not required. Configuration of this room must also provide sufficient flexibility for easy conversion to a training or meeting area.

(14) Weapons and Comsec Vaults

These areas provide for the secure storage of weapons and/or communications equipment. The vaults may also be used for storage of other types of equipment requiring special security measures, such as cryptographic gear. Special storage racks (GFGI) and intrusion systems are required for this area. Storage racks are secured to cast-in-place wall anchors integrated into the initial construction. A dual door system is utilized with a vault door swinging into the corridor and a security "day gate" door swinging into the vault. Vault doors shall open against corridor walls (180 degree arc) to avoid blocking the egress path.

Vault construction shall be consistent with DOD 5200.1-R and Mil Handbook 1013 1A requirements for a Class "A" Vault. All walls, the floor and ceiling shall be constructed of 200-mm thick reinforced concrete. The vault door shall meet Federal Specification AA-D-00600C for "Class 5" construction. In-swinging, "day gate" door shall be fabricated with a steel frame and wire mesh panel construction. Provide cast-in-place anchor points as indicated on the drawings and coordinated with users. The contractor shall construct all vaults to pass the DOD certification inspection and obtain certification.

(15) Building Utility and Circulation Spaces

This non-assignable area accounts for space taken up by such elements as structural columns, walls, chases and common corridors. Utility space shall be provided for mechanical, electrical, and communications equipment, and other miscellaneous equipment and functions. The mechanical room shall support all equipment required for building heating, ventilation and domestic hot water, except air handling units, infrared heaters, and unit heaters. An electrical room shall be included for entrance and distribution panels. All telephone and local area network equipment shall be located in a communications room. The mechanical and electrical rooms shall be accessed only from the exterior of the building. Facility designs shall be configured to minimize corridors.

(16) Fluid Storage

Space dedicated to storage tanks for various fluids required to maintain vehicles, including motor oil, gear oil, hydraulic fluid, transmission fluid and anti-freeze. Tank storage of fluids shall be segregated between supply and waste/recycle. Supply fluids are pumped from tanks through fixed piping to hose reels mounted on the exterior walls of maintenance and repair bays. Waste fluids are extracted from vehicles and manually transferred to holding tanks. Space shall also be provided for the location of two air compressors serving the facility. All tanks and compressors shall be mounted on concrete housekeeping pads. Provide passive and active ventilation as required by NFPA and IBC codes for storage areas with the volume of flammable liquids indicated.

3.2.5 Government Furnished Items

The Government will furnish the items of equipment and furnishings as itemized below. All items listed below will be delivered to the Contractor for assembly and installation. The Contractor is responsible for protection and installation of all items as specified into the completed facility. Installation shall be after the pre-final inspection discrepancies have been corrected and prior to the final inspection. For Contractor's planning, the items will be available at a location within one half mile from the construction site no later than 30 days prior to the pre-final inspection. The final inspection will not occur until all items are installed in place. Minor changes to this list may be made by the Government to accommodate availability of items. When the Government furnished items are delivered, the Contractor shall verify the quantity and condition and acknowledge receipt in writing to the CO. The Contractor shall also report in writing to the CO within 24 hours of delivery any damage to or shortage of the property as received.

The following items shall be Government Furnished and Contractor Installed (GFCI):

<u>Item</u>	<u>Quantity</u>
tire changing machines and cages	2
portable steam cleaner	2
workbenches	11
office workstations	11
refrigerators	2
microwave ovens	2

### 3.2.6 Architectural Design

#### (1) Floor Plan.

All plan drawings provide conceptual representations of buildings consistent with army standard designs and as established through coordination meetings with Fort Lewis Interim Brigade and Department of Public Works representatives, and the Seattle District Corps of Engineers. The floor plans have been designed to serve the programmatic requirements established during a Design Charrette and subsequent programming meetings held at Fort Lewis. It is the Contractor's responsibility to ensure that the final design is in compliance with all regulatory agencies. Variations from the floor plans and areas indicated will not be allowed without prior approval by the COE PM. The mechanical, electrical and communication rooms have been preliminarily sized and shall be coordinated with actual equipment components and the selected structural system. Louvers indicated on the drawings are an approximation only and shall be sized and located to meet the specific requirements of the mechanical systems and natural ventilation designed for these buildings. A roof overhang shall be constructed at the main entry to protect facility users entering and exiting the building. A CMU screen wall compatible with the Fort Lewis Installation Design Guide and AT/FP Construction Standards shall be provided around garbage dumpsters, mechanical equipment, electrical transformers and similar equipment and accessory items located outside of buildings.

#### (2) Exterior Design.

The TEMB, and DESB structures shall be constructed with non-combustible, low-maintenance materials that are compatible with the guidance provided herein. All materials used in common on the three structures shall match in color, texture and pattern. The entire facility shall present a coordinated, monochromatic, military campus appearance.

- (a) TEMB: The exterior design of the TEMB's shall feature walls constructed of two materials/structural systems. The lower portion of walls shall be a concrete masonry unit (CMU) veneer wall system with 200 x 100 x 400 mm integral colored split-faced and ground surface accent units on the exterior, and 200 x 200 x 400 mm structural units on the interior. English unit equivalent CMU may be substituted for metric sizing. Contractor is responsible for all coordination required between measurement systems. Provide silane or siloxane based clear sealers, with solids content of 20% minimum, for all exterior CMU surfaces.

The upper portion of all walls shall be constructed of insulated metal siding panels. Panels shall be a manufactured "sandwich" type panel system with factory finished exterior and interior metal surfaces. All fasteners shall be concealed. Exterior surface shall have a ribbed panel profile. Insulating value of the panel shall be a minimum of 3.34 m<sup>2</sup> Kw (R-19). Complete paneling with standard corner, base, cap, sill, head, jamb and similar pre-finished flashing and edge trim.

Foundation wall shall be insulated on the exterior face with 1.76 m<sup>2</sup> Kw (R-10) minimum rigid insulation. Top of insulation shall be located at the bottom of exterior pavements.

The roof shall be a standing seam metal roof applied directly over staggered layers of rigid insulation. All fasteners shall be concealed. The insulation shall in turn be laid on a sealed vapor retarder, which is on a metal deck substrate. The assembly shall have sufficient rigid insulation to provide a 5.28 m<sup>2</sup> Kw (R-30) value. For the safety of maintenance personnel, fall protection anchor points shall be provided at all roofs.

Anchor points shall be located at the ridge with location and load capacity meeting OSHA requirements for fall protection systems. Sheets A-2 through A-4 provide a conceptual representation of the facility elevations. Roof penetrations shall be avoided. All roof-mounted ventilators shall be low profile, "mushroom" type. Gooseneck style ventilators are prohibited. Prefinished continuous gutter and downspout systems shall be provided.

Where possible, locate all vents and other projections through exterior wall and roof away from high-visibility areas. Plumbing and mechanical vent stacks shall exit the building through the side walls rather than the roof.

Exterior personnel doors and frames shall be hollow metal type, painted and thermally insulated, with full perimeter weather-stripping. All frames shall be solid grouted. Vehicle doors shall be motor operated, coiling steel type with insulated slats. Provide full jamb, sill and hood weather gasketing.

Window frames shall be thermally broken, light bronze anodized aluminum. Glazing to be Low-E insulated laminated glass, clear or light grey tinted. Louvers and frames shall be prefinished galvanized steel.

- (b) DESB: All DESB shall be sided with factory finished metal siding. Complete paneling with standard corner, base, cap, sill, head, jamb and similar pre-finished flashing and edge trim. The roof shall be a structural standing seam metal roof applied directly on the beam/purlin system. Wall, roof and perimeter insulation is not required at the DESB buildings. Doors and louvers shall match the requirements of the TEMB. Exterior walls shall have a continuous 200-mm high concrete curb to provide containment of fluid spills. Entrance doors shall be manually operated, coiling steel type with uninsulated, prefinished steel slats. Vision lights are not required. Door threshold shall be flush with floor slab.

(3) Exterior Finishes:

Structural standing seam metal roofing, metal siding, metal doors, metal trim for siding, roof and openings and miscellaneous roof accessories shall be factory finished in a monochromatic light tan. Window frames shall have a light bronze anodized finish. Integrally colored CMU shall complement roof and wall panel color. Gutters and downspouts shall have factory finish to match roofing and siding. Miscellaneous exterior exposed items such as: gas meters, louvers, and backdraft dampers shall have an approved powder coat factory finish or two-part modified polyurethane finish to match metal siding color. All vents and roof penetrations shall be painted to match the adjacent roof or wall surface. Paint finishes shall be either an approved powder coat, or two part modified polyurethane.

(4) Interior Design:

The facility interior design shall be appropriate for the designed function of the space, utilizing materials with low maintenance qualities for the anticipated use, as well as consideration for health, fire and life safety requirements. Interior partition walls shall be painted CMU except for vault enclosures that are reinforced concrete, or steel stud/gypsum wallboard partitions separating administrative area rooms as indicated on drawings. All exposed corners of CMU shall be constructed with "bullnose" block. Latrine, shower and locker room walls may use glazed block in lieu of painted surfaces. High quality, aesthetically pleasing materials are desirable whenever possible, while keeping the cost of the project within budget. All permanent finishes (vinyl flooring, ceramic tile, plastic laminates, etc.) shall be neutral tones and patterns. These neutral shades can range from

very light (such as off-white relating to the particular color tone) to a mid-range neutral of this same shade. Non-permanent finishes (paint, vinyl wall coverings and similar materials) may be any coloration appropriate to the facility. Use color to add interest and vitality, but do not allow color to dominate the environment. Paint ceilings off-white and do not use spray applied acoustical textured treatment.

- (a) Interior doors and frames, except for vault doors, shall be hollow metal. Doors in rated or secured walls shall be rated and insulated accordingly. Solid grout all frames.
  - (b) Interior glazing shall be clear, laminated glass or fire rated glazing in rated walls. Vision glass in doors in rated or secured walls shall be wire glass.
  - (c) Hardware shall conform to Building Hardware Manufacturers Association (BHMA) standards. Finish shall also conform to BHMA, with satin finish stainless steel (US32D) used for interior and exterior doors. Non-removable pin hinges shall be used in secured areas. Building entry doors and noted interior doors shall have standard key locking system compatible with Best Lock Corporation "BEST" interchangeable 7-pin cores. System shall be expandable.
  - (d) Ceilings shall be 3 meters in height unless other wise noted. Ceiling material shall be acoustical tile, painted gypsum wallboard, painted concrete, or painted steel structure depending on the location. Vaults shall have acoustical tile ceiling adhered to the bottom of the concrete lid.
  - (e) Interior walls shall extend from slab to roof structure, underside of Class ~~B-A~~ Vault lid, or ceiling grid as indicated on drawings. Walls between the repair bays and administrative area and at the Break/Training/Conference room shall have an STC rating of 45. Noted walls to have one-hour fire rating.
  - (f) All interior floors shall be reinforced concrete. Standard finish is a steel troweled, clear sealed surface. Selected rooms shall have additional finishes as listed in the interior finish schedule on the drawings.
  - (g) Separate bridge cranes shall be provided to service the Repair and Scheduled Maintenance Bays. Height to the bottom of the hook shall be approximately 6,000 mm. Provide adequate clearance above the hook for crane mechanism, bridge beam, mechanical and electrical systems, and roof/ceiling structure.
  - (h) Locate all vents and other projections through exterior wall and roof away from high-visibility areas. All vents and roof penetrations shall be painted to match the roof. Paint finish shall be either an approved powder coat (PVF2), or two part modified polyurethane.
  - (i) All furniture (GFCI) for individual offices shall be freestanding office workstations as opposed to open area workstations.
- (5) Exterior/Interior Signage:  
Interior signage shall be compatible with Fort Lewis Installation Design Guides and the Americans with Disabilities Act Accessibility Guidelines. Signs shall provide room names and numbers, with two changeable message strips per sign. Exterior signage with building number shall also be provided. Submit sign samples and number/labeling plan for all rooms in the facility to the CO for approval prior to fabrication.



### 3.3 STRUCTURAL REQUIREMENTS

3.3.1 Structural Design and construction shall be in accordance with the requirements stated herein, the Geotechnical Report and with the applicable requirements of paragraph " 2. CODES AND STANDARDS." It shall conform to the Army Standard Design for Tactical Equipment Maintenance Facilities with modifications as indicated in paragraph 3.2, ARCHITECTURAL REQUIREMENTS.

3.3.2 Structural Design Submittal: Structural design drawings and computations, signed and sealed by a professional structural engineer registered in the State of Washington, shall be submitted in accordance with Section 00810 Design-Build Contract Procedures, paragraph 2. Preparation of Phase I Project Design Documents.

- (1) Structural Design Criteria: Structural design shall be in accordance with the following criteria as applied to this facility:

Chapter 8 of Technical Instructions, TI 800-01 dated 20 July 1998.

- (2) NOTE: HQUSACE publications are available from the USACE TECHINFO web site at <http://www.hnd.usace.army.mil> - select TECHINFO; Engineer Publications; Instructions; then Technical Instructions.

- (3) Seismic Design Requirements: Seismic design of the subject facility shall be performed in accordance with the requirements of TI 809-04 dated 31 December 1998, using the following design criteria:

- |                                                          |               |
|----------------------------------------------------------|---------------|
| (a) Seismic Use Group:                                   | I             |
| (b) Short Period Spectral Acceleration, $S_s$ (%G):      | 125           |
| (c) One Second Period Spectral Acceleration, $S_1$ (%G): | 40            |
| (d) Site Class:                                          | <del>DC</del> |

- (4) Wind Loads: Design of the subject facility for wind loads shall be performed in accordance with the requirements of ASCE 7-98, using the following design criteria:

- |                                                           |                 |
|-----------------------------------------------------------|-----------------|
| (a) Wind Velocity, 3-sec gust                             | 40 m/s (90 mph) |
| (b) Exposure Category                                     | C               |
| (c) Building Category                                     | IV              |
| (d) Maximum Deflection of building under design wind load | $h/400$         |

- (5) Snow Loads: Design of the subject facility for snow loads shall be performed in accordance with the requirements of ASCE 7-98, using the following design criteria:

- |                            |                                       |
|----------------------------|---------------------------------------|
| (a) Roof Snow Load         | $1.5 \text{ KN/m}^2$ (30 psf) + drift |
| (b) Minimum Roof Live Load | $1.5 \text{ KN/m}^2$ (30 psf)         |
| (c) Building Category      | IV                                    |

- (6) Floor Loads: Dead Load and Live Loads per UFC 3-310-01, except the vault floors shall have a minimum live load of 29 kPa (600psf). Steel reinforced structural concrete slab-on-grade floors shall be of strength and thickness required for the various functional areas of the installation. The floor design for the CSSC, MARC and RSTA/IB shall accommodate radiant in-floor heating requirements. These facilities shall utilize mobile lifts (e.g., ARI-Hetra Heavy Duty Mobile Lift or equal) capable of lifting the heaviest intended vehicle. The floor shall be designed to support the maximum lifting capacity of the mobile lifts in

footprint configurations consistent with the minimum and maximum sized intended vehicles. Signage shall be provided indicating vehicle size and weight restrictions relative to the mobile jacks. Floors shall be functionally and aesthetically suitable for safe operation of the facility, including finish and flatness tolerance.

- (7) Crane Loads: The design for the subject facility shall incorporate dead and live loads induced by a 5 metric ton bridge crane over the maintenance bays and a 10 metric ton bridge crane over the repair bays.
- (8) Foundation Design for frost protection, soil properties, bearing capacity and floor slabs shall be in accordance with the guidance provided in the attached Geotechnical Report (see Appendix B).
- (9) Material Strengths:
  - (a) Concrete:  $f'_c=27.6$  MPa (4000 psi) minimum at 28 days, except Vehicle Maintenance/Repair Slab on Grade shall be  $f'_c=34.5$  MPa (5000 psi) minimum at 28 days.
  - (b) CMU:  $f'_m=10$  MPa (1500 PSI) minimum.
  - (c) Reinforcing Steel: ASTM A615, Grade 60.
  - (d) Welded Wire Fabric: ASTM A185,  $F_y = 448$  MPa
  - (e) Structural Steel:
    - 1) Rolled wide flange shapes- ASTM A992,  $F_y=345$  Mpa (50KSI)
    - 2) Other rolled shapes and plates - ASTM A36,  $F_y=250$  MPa (36 ksi), or ASTM A 572 ,  $F_y = 345$  MPa (50 ksi)
    - 3) Structural tubing - ASTM A500,  $F_y=320$  MPa (46 ksi),
    - 4) Cold formed steel -  $F_y=380$  MPa (55 ksi).
    - 5) Open Web Steel Joist:  $F_y=350$  Mpa (50ksi)
- (10) Fabrication and Erection of Structural Steel shall be in accordance with the applicable provisions of AISC Code of Standard Practice Sections 6 and 7. The steel fabricator has to be certified under Category I in accordance with AISC Quality Certification Program. Structural framing shall be shop primed in accordance with the fabricators standard system.
- (11) Erection of the structural steel for the facility shall be coordinated with the installation requirements of the lightning protection system. Adequate coordination shall be made to ensure ease of installation of all associated material for the lighting protection system, including the ability to make all necessary connections to structural members.
- (12) Roof Design: Framing members supporting the SSSMR system and their connections shall be designed in accordance with AISC Specifications (LRFD), AISI Manual, or SJI Specifications and Tables, as applicable. The Contractor shall submit the design for review and approval.
- (13) HVAC Maintenance Access: Access shall be provided to overhead Air Handling Units by means of ladders and catwalks. Catwalks shall consist of floor grating and steel framing members supported by the roof rafter beams. Lateral bracing shall be designed to resist seismic loads. The catwalk and its connections shall be designed in accordance with AISC Specifications (LRFD), AISI Manual. Ladders shall be anchored to the wall with safety cage enclosures. The catwalk perimeter shall be designed such that it may be safely

accessed by the ladder. Catwalks, Ladders and Handrails shall conform with the requirements of EM 385-1-1.

### 3.4 MECHANICAL REQUIREMENTS

3.4.1 Mechanical design and construction shall be in accordance with the applicable requirements of paragraph 2, Codes and Standards, and the following:

(1) Uniform Building Code (UBC), Latest Edition 1997.

International Building Code (IBC-2000)

(2) National Fire Protection Association (NFPA) Latest Edition of the following:

(3) NFPA 10                      Portable Fire Extinguishers 1998

(4) NFPA 13                      Installation of Sprinkler Systems 1999

(5) NFPA 17A                      Wet Chemical Extinguishing Systems 1998

(6) NFPA 70                      National Electrical Code 1999

(7) NFPA 72                      National Fire Alarm Code 1999

(8) NFPA 90A                      Installation of Air Conditioning and Ventilation Systems 1999

(9) NFPA 90B                      Installation of Warm Air Heating and AC Systems 1999

(10) NFPA 101                      Life Safety Code 2000

(11) NFPA 170                      Symbols for Architectural and Engineering Drawings 1999

(12) MIL HDBK 1008C              Fire Protection

~~(13) Laboratory Publications:~~

(13) Underwriters Laboratories (UL)

(14) Factory Mutual Approval Guide

(15) National Electrical Manufacturer's Association

(16) Institute of Electrical and Electronic Engineers

(17) ASHRAE (latest edition) Heating, Refrigeration, Air Conditioning Handbooks of Fundamentals, Applications and Equipment

(18) Chapter 51-13 Washington State Ventilation and Indoor Air Quality Code (1997)

3.4.2 Design Conditions. The outside design temperatures used are based on AFM-88-29 (Engineering Weather Data), dated 1 July 1978. The inside design temperatures are based on MIL-HDBK-1190 (Facility Planning and Design Guide). All design shall comply with federal energy code 10 CFR 425.

(1) Outside Winter

(a) Dry Bulb: -4.4 degrees C. (97 1/2 %) (24 degrees F.)

(b) Dry Bulb: -7.2 degrees C. (99%) (19 degrees F.)

(2) Inside Winter

- (a) Administration Areas, Dry Bulb: 20 degrees C. (68 degrees F.), no humidity requirements.
- (b) Weapons Vault, Dry Bulb: 20 degrees C. (68 degrees F.), 30% humidity maximum.
- (c) Mechanical Room, Dry Bulb: 10 degrees C. (50 degrees F), no humidity requirements.
- (d) Vehicle Bay Area: 10 degrees C (50 degrees F), no humidity requirements.

(3) Outside Summer

- (a) Dry Bulb: 27.8degrees C. (2 1/2%) (82 degrees F.)
- (b) Mean Coincident Wet Bulb: 17.7degrees C. (64degrees F.)
- (c) Daily Range: 16 degrees C. (30 degrees F.)

(4) Inside Summer

- (a) Administration Areas, Dry Bulb: 23.9 degrees C. (75 degrees F.) (through economizer, air conditioning is not authorized).
- (b) Vehicle Bay Area: No upper limit on humidity or temperature requirements.
- (c) Communications Rooms: 40.0 degrees C maximum (104 degrees F).

(5) Degree Days

- (a) Heating: 5339 per year

(6) Elevation: 92 meters (301 feet)

(7) "R" Values (approximate):

- (a) Walls 3.34 m<sup>2</sup>Kw (R=19 )
- (b) Roof 5.25 m<sup>2</sup>Kw (R =30)

(8) Sound Requirements are as described by ASHRAE Handbook,1999 HVAC Applications, chapter 46:

- (a) Administration Areas, RC 25 maximum
- (b) Mechanical Room, no requirement
- (c) Vehicle Bay Areas, no requirement

3.4.3 Provide detailed heat gain/loss calculations for the administrative portions of MARC, CSSC, RSTA and IB buildings using an hourly analysis and real numbers obtained from these documents and user interviews. A computer simulation shall be performed using a program that is capable of performing an hourly analysis. Results from the program shall be used to size and place equipment in the administrative areas (example: final diffuser locations). Heat gain/loss calculations are not required for the vehicle bays.

3.4.4 The Contractor shall contract Puget Sound Energy Services to design, install and own meter set assemblies and underground natural gas piping to the buildings. The Contractor shall provide the gas piping system from the point of delivery, defined as the outlet of the meter set assembly as provided by Puget Sound Energy Services. For bidding purposes, the Contractor shall assume a price of \$100,000 for services supplied by Puget Sound Energy Services. Any difference in cost of Puget Sound Energy Services will be adjusted in the contract price.

~~3.4.5 A propane mixing station (facility) is located adjacent to this project. Propane is mixed with air to deliver heat content equivalent to natural gas. This back-up fuel source shall permit the facilities to obtain interruptible natural gas rates.~~ The Contractor shall provide piping (separate from the natural gas piping to be installed by PSE) as indicated on the drawings from the point of connection (see civil drawings) ~~to each building.~~ Isolation valves shall be provided to permit manual connection of the propane system to the building natural gas system. The propane piping shall tee into the natural gas piping between the natural gas meter and corresponding building.

3.4.6 All mechanical equipment shall be sited as indicated (no rooftop installations). Mechanical room shall allow for maintenance access. Floor slab shall be sloped toward area floor drains. Pumps and other large floor-mounted equipment shall be mounted on housekeeping pads - 100 mm (4-inch) minimum height. Gauges shall be mounted to be easily readable. A single pressure gauge shall be manifold across each pump inlet, outlet, and inlet to the suction diffuser; ball valves shall be used for isolation on the threaded black A53 steel gauge manifold. Thermometers shall be industrial dial type, not liquid filled "mercury" scale type, and shall be mounted in thermowells with conducting grease. Each closed loop system shall have a replaceable bladder type expansion tank, with the exception of the hot domestic water system, which may use a diaphragm type. Off each air separator shall be an industrial type air vent (iron body stainless steel moving parts, such as B&G 107a). At a minimum, coils and pumps shall be provided with isolation valves. Manual air vents shall be located on the high points of closed loop systems and hose connection drain cocks shall be located at all low points. Heating systems shall have a chemical pot feeder for closed system treatment. Heating water loops shall be provided with temperature reset based on outside air. All coils shall be controlled with valves as indicated in the mechanical schedule. All control valves shall be protected with strainers. Temperature and pressure test plugs shall be installed on the inlet and outlet of all coils, strainers at pumps and boilers.

3.4.7 Pump motors shall be sized to provide non-overloading operation over the entire pump curve.

3.4.8 Ventilation: Ventilation shall be provided in accordance with ASHRAE Ventilation Standard 62 -- not less than 9.4 L/s (20 cfm) per person for general occupancy areas for acceptable indoor air quality. All ductwork shall be galvanized steel, constructed in accordance with SMACNA Low Pressure Duct Standards. It is desirable that any grates, louvers, or supply/return vents in occupied areas shall be either an approved powder coat finish or two-part polyurethane finish to match surrounding color.

3.4.9 Building Cooling System: Air conditioning is not authorized. Administrative area air handling units shall be provided with economizer cycles.

3.4.10 Administrative Area Heating System: The heating system shall consist of gas fired boilers. ~~To obtain interruptible natural gas rates, a back-up fuel source is required. The back-up fuel source shall be provided by a propane mixing station (propane mixing facility to be provided under another contract). The mixing station shall create a propane/air mixture equivalent in heat content to natural gas.~~ The MARC and CSSC buildings shall contain two hot water boilers. The RSTA and IB buildings shall each contain a single hot water boiler. The MARC building administrative area contains two constant volume air handling units. The smaller air handling unit serves the conference room that is occupied intermittently. Occupied mode of the conference room is determined through status of the light switch instead of schedule. The larger air handling unit serves the remaining administrative portions of the building. The CSSC building administrative area also contains two air handling units. Each unit serves a separate zone. The RSTA and IB building administrative areas each contain a single

constant volume air handling unit. A preliminary layout of these systems has been provided. The Contractor shall complete the design. All air handling units in the administrative areas shall be provided with economizer cycles. The air handling units shall consist of combination mixing box/filter, medium size access, hot water coil, backward inclined or air-foil design fan (as indicated) and a discharge module. All equipment and components shall be direct digital control.

3.4.11 Weapons Vaults: Vaults shall be provided with forced air hot water unit heaters. A local thermostat shall be provided for each unit heater. The vaults shall be provided with adsorption dehumidifiers to maintain a maximum relative humidity level of 30 percent. Exhaust fans located within the vaults shall be interlocked to operate when the vault lights are energized.

3.4.12 Mechanical Rooms and Fluid Storage Rooms Heating Requirements: Forced Air hot water unit heaters shall be installed to prevent freezing.

3.4.13 Communications Rooms Cooling: Maximum heat output of equipment is 1.8 kW; therefore, a 275 liters/second fan shall be provided to limit the maximum temperature to 6 degrees C above ambient.

3.4.14 Vehicle Bay Area:

- (1) The primary heating system for the MARC, CSSC, RSTA AND IB vehicle bay areas is an in-floor radiant heat system. The in-floor radiant heat system consists of 20 mm diameter tubes (beneath the concrete in a layer of sand) with a spacing of 250 mm. Tubing circuits are arranged in a counterflow spiral pattern (i.e. supply and return lines are routed next to each other) to minimize temperature variations across the concrete slab. A detailed description of the system is shown on the Vehicle Bay HVAC Plan drawing and Sequence of Operation. A secondary hydronic loop, with a separate reset schedule, supplies hot water to the in-floor radiant tubing system.
- (2) A vehicle exhaust system shall be provided for each bay. Each vehicle exhaust connection and associated 127 mm diameter flexible hose shall be provided with a separate exhaust fan that is manually energized. The flexible hose shall either be overhead hanging or on a drum roller.
- (3) In the event carbon monoxide levels exceed 35 ppm or carbon dioxide levels exceed 5,000 ppm, an air handling unit shall provide 100 percent outside air to dilute the concentration of contaminants. Furthermore, a roof mounted exhaust fan shall energize to exhaust at a rate equivalent to outside air being provided. A detailed description of the system is shown on the Vehicle Bay HVAC Plan drawing and Sequence of Operation. Both, the MARC and CSSC buildings, contain two ventilating air handling units each. Both, the RSTA and IB buildings, contain a single ventilating air handling unit each.

3.4.15 HVAC Controls: Direct digital controls (DDC) shall be provided for the heating, ventilating and air conditioning systems. Unit heaters, convectors, fin tube, and utility room ventilation may be controlled through local thermostats. The heating water loop shall be reset in response to outdoor air temperature. Direct digital controllers shall be provided with all required hardware to permit future connections with fiber optic cable. A future base energy monitoring control system (EMCS) shall monitor all points indicated below and any values calculated by the building DDC systems. Sequences of control shall be provided in the O&M manual. Testing, adjusting, and balancing of the systems shall be coordinated with the control system installation. All HVAC control components shall be verified to be properly installed and operating as specified before proceeding with testing, adjusting, and balancing. HVAC commissioning procedures shall be used to verify the proper installation and functioning of the equipment. Contractor shall have the Mechanical Design Engineer of Record present on-site for all

commissioning. At a minimum, the following points shall be monitored in addition to all other points required for control:

- (1) building loop heating water supply and return temperatures
- (2) boiler supply and return temperatures
- (3) in-floor radiant heat supply and return temperatures
- (4) all boiler controls
- (5) air handling unit return and supply air temperatures
- (6) filter status via differential pressure switch
- (7) zone temperature setpoints
- (8) sensor readings including but not limited to temperature, CO concentration, CO<sub>2</sub> concentration and pressures
- (9) control valve positions (excluding unit heater control valves)
- (10) pump status via differential pressure switch
- (11) fan status via current switch
- (12) dampers and position

#### 3.4.16 Fluid Supply and Waste/Recycle

The MARC and CSSC shall be provided with bulk fluid supply and waste/recycle. Each building shall be supplied with an 1,850 L supply motor oil tank, 1,850 L supply gear oil tank, 1,850 L supply anti-freeze tank, 1,850 L supply Dextron transmission tank and 1,850 L supply hydraulic oil tank. Supply tanks shall be provided with air-operated diaphragm pumps, piping and controls to supply the fluid to hose reels located between vehicle bays (i.e. 10 hose reels per building per fluid). Hoses shall be supplied with pre-set control handles (nozzles) that have a range of 1.0 to 15 quarts (English units). Each building shall also be provided with (2) 1,850 L waste oil tanks (used for motor oil and gear oil), a 925 L waste anti-freeze tank, a 925 L waste Dextron transmission fluid tank and a 925 L hydraulic waste tank. Tanks shall be provided with overflow protection, fill connection (coordinate with fluid supplier), waste removal connections (coordinate with waste/recycle supplier), waste oil funnel (waste tanks only), float gauge, vents, interstitial tank monitoring and any other appurtenances required by applicable federal, state and local laws and regulations. Anti-freeze tanks shall be manufactured of polyurethane. All tanks shall be UL listed and of double wall construction.

#### 3.4.17 Plumbing:

- (1) Water piping and fittings shall be as specified in 00890-15400. Water supply piping shall not be buried under concrete floors.
- (2) Soil, waste and vent piping shall be as specified in 00890-15400. Hubless cast-iron soil pipe shall not be installed under concrete floor slabs. Floor drains shall feature trap primers. Provide water meter.
- (3) Plumbing materials, installation, backflow prevention, and drainage shall meet the latest National Standard Plumbing Code requirements.

- (4) Domestic hot water shall be provided by natural gas-fired hot water heaters located in the mechanical rooms. Hot water shall not exceed 120 degrees F. A hot water circulating pump shall be installed on the system that circulates under all operating conditions.
- (5) National Standard Plumbing Code (1996): Fixtures for use by the physically handicapped shall be in accordance with Council of American Building Officials CABO A117.1, Accessible and Usable Buildings and Facilities (1992). All fixtures shall be as specified in 00890-15400 and white.
- (6) The common area of each building willshall contain one refrigerated drinking fountain.
- (7) Men's washroom in the MARC building willshall have one accessible water closet, one urinal, one lavatory, one shower stall and one floor drain. The woman's washroom in the MARC building willshall have one accessible water closet, one lavatory, one shower stall and one floor drain.
- (8) Men's washroom in the CSSC building willshall have two water closets (one accessible), two urinals, two lavatories, two shower stalls and one floor drain. The woman's washroom in the CSSC building willshall have one accessible water closet, one lavatory, one shower stall and one floor drain.
- (9) Men's washroom in the RSTA and IB buildings willshall each have one accessible water closet, one urinal, one lavatory and one floor drain. The woman's washroom in the RSTA and IB buildings willshall each have one accessible water closet, one lavatory and one floor drain.
- (10) The Janitor closet in each building shall have all mounted fixtures with hose bib, vacuum breaker, floor mounted type service sink and a floor drain. The break room in each building willshall contain one kitchen sink, and one refrigerator with built-in ice maker.
- (11) Mechanical rooms shall have floor drains ample enough to eliminate indirect drain piping routed across the floor.
- (12) Weapons storage vaults and one maintenance bay per building shall have floor drains.
- (13) Hose bibs shall be provided between each set of roll-up doors in the vehicle bays.

<u>Symbol</u>	<u>Fixture</u>
WC-1	Water Closet
WC-2	Water Closet (Accessible)
UR-1	Urinal
LV-1	Lavatory
SK-1	Kitchen Sink
WC-1	Electric Water Cooler (Handicapped)
SK-2	Service Sink
HB-1	Hose Bibb
WH-1	Wall Hydrant
FS-1	Floor Sink With Trap Primer
FD-1	Floor Drain With Trap Primer



#### 3.4.18 Fire Protection/Detection:

- (1) Fire protection system ~~will~~shall be based on ETL 93-5, NFPA, and Military handbook 1008C. A wet system is required for the MARC, CSSC, RSTA and IB buildings.
- (2) Services and Qualifications of Fire Protection Engineers are as follows: The services and review of a qualified fire protection engineer are required. A qualified fire protection engineer shall be an integral part of the design team, and shall be involved in every aspect of the design as it relates to fire protection. This includes, but is not limited to, building code analysis, life safety code analysis, design of automatic detection and suppression systems, water supply analysis, and a multi-discipline review of the entire project. For the purpose of meeting this requirement, a qualified fire protection engineer is defined as an individual meeting one of the following conditions:
  - (a) A registered professional engineer (PE) who has passed the National Council of Examiners for Engineering and Surveys (NCEE) fire protection engineering written examination.
  - (b) A registered PE in related engineering discipline with a minimum of 5 years' experience dedicated to fire protection engineering and has attained state certification for fire protection engineering.
  - (c) Installation Requirements: Installation of fire alarm detection systems, fire protection suppression systems, and any of the components, the technician installing this equipment must be licensed in the State of Washington and hold the proper endorsement for such installation. The license and endorsements are as follows:  
SAF = Fire Alarms  
SEF = Extinguishing Systems  
SAFS = Special Agent Fire Suppression System
  - (d) A licensed journeyman electrician can install fire alarm systems and its components if the above endorsements are stamped on their license and factory trained, or NICET II certified and factory trained in the installation of the fire alarm devices being installed. The installer must be NICET II certified and licensed with the State of Washington licensing program to inspect test and certify the operational condition of the system. All licensees, endorsements and NICET certifications must be presented to the Contracting Officers and the fire prevention officers, the company name and personnel name(s) installing the system before work is to begin.
  - (e) All fire alarms, fire suppression, and special agent systems must be installed IAW the appropriate NFPA Code 13 13A, 17, 17A, 24, 25, 72, 101 and any other code reference mentioned in contract specifications, manufacturer's recommendations and construction drawings. Current licensees, endorsements, and NICET certification must be on file.

#### 3.4.19 Testing and Balancing:

- (1) General: The facility shall be essentially complete prior to testing. Doors and windows surrounding each area to be balanced shall be closed during testing and balancing operations. Air systems shall be complete and operable. Exhaust fans shall be operational. Hydronic systems shall be complete and operable with balancing valves, coils, pumps, piping and control components in place. If a system cannot be adjusted to meet the design requirements, the Contractor shall promptly notify the Contractor and copy the Contracting Officer in writing. The Contractor shall correct the system and have the

TAB Contractor test again and report in writing to the Contractor and the Contracting Officer. Each system shall be adjusted until all flow quantities are within plus 10 percent and minus zero percent. Air balancers shall be nationally certified. Representatives from the design firm(s) shall be present for commissioning.

- (2) General Balancing Methods: Throttling losses shall be limited. Following final acceptance of certified reports by the Contracting Officer, the setting of all HVAC adjusting devices including valves, splitters, and dampers shall be permanently marked by the testing and balancing engineer so that adjustment can be restored if disturbed at any time. Provide auxiliary (simulated) loads if required for fill testing.
- (3) Acoustics: After the systems are properly tested, adjusted and balanced, sound levels shall be checked in accordance with the applicable provisions of AABC MN-1. Octave-band analysis and noise-criteria curve data shall be recorded on forms shown in AABC MN-1. All occupied areas shall be verified to be within sound levels acceptable within comparable commercial facilities and stated STC levels. Any areas not meeting the requirements shall be clearly indicated on the form and an explanation of all discrepancies shall be provided in test report.

#### 3.4.20 Commissioning Team and Checklists

- (1) General: The Contractor shall designate team members to participate in the pre-commissioning checks and the functional performance testing specified herein. In addition, the Government will be representative of the Contracting Officer, and the Using Agency. The team members shall be as follows:

<u>Designation</u>	<u>Function</u>
Q	Contractor's Chief Quality Control Representative
M	Contractor's Mechanical Representative
E	Contractor's Electrical Representative
T	Contractor's Testing, Adjusting, and Balancing Representative
C	Contractor's Controls Representative
D	Contractor's Mechanical Designer
O	Contractor's Officer's Representative
U	Using Agency's Representative

- (2) The commissioning team shall complete each checklist shown in Specification 15995. Acceptance by each commissioning team member of each pre-commissioning checklist item shall be indicated by initials and date unless an "X" is shown indicating that participation by the individual is not required. Acceptance by each commissioning team member of each functional performance test checklist shall be indicated by signature and date.
  - (a) Pre-Commissioning Checks: Pre-commissioning checks shall be performed for the items indicated on the checklists in Specification 15995. Deficiencies discovered during these checks shall be corrected and retest in accordance with the applicable contract requirements
  - (b) Functional Performance Tests: Functional performance tests shall be performed for the items on the checklists in Specification 15995. Functional performance tests shall

begin only after all pre-commissioning checks have been successfully completed. Tests shall prove all modes of the sequences of operation, and shall verify all other relevant contract requirements. Tests shall begin with equipment or components and shall progress through subsystems to complete systems. Upon failure of any functional performance test checklist item, the Contractor shall correct all deficiencies in accordance with the applicable contract requirements. The checklist shall then be repeated until it has been completed with no errors.

### 3.5. ELECTRICAL DESIGN REQUIREMENTS

#### 3.5.1 Design criteria

The design ~~will~~shall be based on, but not limited to the following design criteria:

ANSI C2-1997	National Electrical Safety Code
IES	Lighting Handbook
MIL HDBK 1008C	Fire Protection for Facilities
NFPA 70	1999 National Electric Code
NFPA 72	1999 National Fire Alarm Code
NFPA 101	2000 Life Safety Code
NFPA 780	Lightning Protection Code
TM 5-811-1	Electric Power Supply and Distribution
TM 5-811-2	Electrical Design, Interior Electrical System
TM 5-811-3	Electrical Design Lightning and Static Electricity Protection
Standard Drawing No. 40-06-04 Lighting Fixtures, U. S. Army Corps of Engineers	

3.5.2 Equipment shall conform to the requirements of the National Electrical Manufacturers Association , Underwriters Laboratories, Inc., Institute of Electrical and Electronic Engineers, and the American National Standards Institute.

3.5.3 Underground lines/duct shall be installed in accordance with the guidance provided herein and in outline specification 02316 "Excavation, Filling and Backfilling for Utility Systems" of Section 00890 Outline Specifications.

#### 3.5.4 Electrical Service

- (1) General. Power distribution on the base is 13,800 volts, 3 phase, 3 wire. Primary electrical service shall be provided by tapping the existing O/H lines per the Electrical Site Plan. The new high voltage conductors shall be routed down the pole and continue underground to new pad mounted, tamper-proof compartmental transformers as shown on the Electrical Site Plan. The Electrical Site Plans are conceptual and therefore the Contractor is encouraged to propose a different layout as long as it meets the requirements of this Request for Proposal.
- (2) The following criteria pertains to the general exterior service design requirements:
  - (a) Secondary feeders from transformer to facility shall be copper, 600V type USE for service entrance cable, and installed in underground concrete encased duct when in paved areas. Direct buried Schedule 40 PVC ductbank is acceptable for non-paved

- areas. Rigid galvanized steel encased in concrete ~~will~~shall be used under building footings.
- (b) All underground High Voltage duct banks shall be concrete encased and shall include one spare conduit. The duct banks for the service lateral and each type of communications shall include one spare conduit. Provide conduit separation per ANSI C2.
  - (c) Provide all spare conduits and inner-ducts with pull cord.
  - (d) For all 60 Hz power circuits (13.8 kV, ~~477/280~~, and 120/208 V), provide 1 spare conduit of equal size for each conduit installed.
  - (e) All high voltage (13.8kV) taps/connections are to be made on above ground sectionalizers, or loop-fed pad-mount transformers with appropriate bushings. No high voltage taps shall be made in handholes or manholes.
  - (f) Electrical system grounding and lightning protection for the new facilities shall be provided in accordance with the requirements of NEC article 250, ETL 90-6, and NFPA 780. Grounding ~~will~~shall consist of a counterpoise grid system composed of copper clad steel ground rods interconnected by stranded bare 1/0 copper wire. Lightning protection shall include equipotential structural bonds, with the metal roof grounded and bonded.
  - (g) The high voltage cable shall be 15 kV cable, ethylene propylene rubber type insulation (133% level), in accordance with NEMA WC-8.
  - (h) Neutral conductors, cable shields, and all other noncurrent-carrying metallic parts of equipment shall be grounded. Ground resistance of not greater than 25 ohms shall be provided.
  - (i) Label all cables, where they come from and where they go, with embossed tags.
  - (j) All Primary and HV connections shall be loadbreak type rated 200A.
  - (k) Pad mounted transformers shall be 3 phase, delta to wye with grounded neutral, dead front, loop feed with "T-blade" configuration, oil immersed type, loadbreak group operated switch, surge arresters, and dry-well-mounted current limiting fuses. Service transformer shall have two 2 ½ percent taps above and below rated voltage. Provide low impedance transformers where short circuit currents permit. ~~Transformers shall have copper windings.~~ Transformers shall be equipped with a kill switch on the primary side of the transformers. Provide bollards around each transformer for protection from vehicles. Transformers shall be sized to serve the loads indicated and allow for 20% growth.
  - (l) All cabinets shall be provided with padlock hasps.
  - (m) Aluminum shall not be used in contact with earth or concrete.
  - (n) Duct lines shall be concrete encased under all pavement. A brightly colored plastic tape, not less than 75 mm in width and suitably inscribed with a continuous metallic backing and corrosion resistant metallic foil core to permit easy location of the duct line, shall be placed approximately 300 mm below finished grade.
  - (o) Control wiring and communications wiring shall not share the same conduits, raceways, or enclosures as electrical power wires (120 Volts nominal or larger).
- (3) Motors. All motors shall be high efficiency types and use derated values for supply voltages, i.e., for a 480V service use a 460V rated motor; for 208V service provide a 200V

motor. In addition, all motors shall have a safety disconnect switch mounted in a clearly labeled and accessible location. Motors over 7.46 KW shall have under-voltage, phase loss, and phase reversal protection. For induction motors 7.46 KW and larger provide power factor correction capacitors to correct power factor to .90.

### 3.5.5 Lighting

- (1) General. Lighting levels shall be designed in accordance with Illumination Engineering Society (IES) standards except as noted herein. All lamp fixtures shall be energy efficient as per Energy Star requirements, but lamp life shall be specified.
  - (a) Interior Lighting. Areas with suspended acoustical ceiling tiles have lay-in fluorescent fixtures compatible with the ceiling. Open ceiling rooms use suspended, open industrial fluorescent fixtures. Luminaries shall be standard commercial type and conform to the Underwriters Laboratories, Incorporated, Standard for Electric Lighting Fixtures. Energy saving cool-white fluorescent lamps rated 32 watts, 2850 lumens and electronic ballasts are specified. Compact fluorescent lamps shall be used in place of incandescent lamps in small rooms. Switching schemes shall allow fixtures to be turned off when not in use.
  - ~~(b) The POL storage buildings are classified as Class I, Division I and therefore the light fixtures shall be in accordance with Sheet 71 of the Corps of Engineers, Standard Detail No. 40-06-04.~~
  - (b) Luminaries for the scheduled maintenance and repair bays shall be installed 8M above finished floor which is the same height as the radiant heaters. The lamps in these bays shall be metal halide.
- (2) Lighting systems shall be designed to meet the following illumination levels:

GENERAL ILLUMINATION LEVELS TABLE	
Area	Lux (foot-candles)
<b>Interior</b>	
Maintenance Repair Bays	807 (75.0)
<del>POL</del>	<del>215 (20.0)</del>
Electrical/Mechanical Rooms	323 (30.0)
Toilets	215 (20.0)
Entry	323 (30.0)
Corridors	323 (30.0)
Administration Offices	538 (50.0)
General Item Repair Room	538 (50.0)
Janitor	161 (15.0)
Tool Room	323 (30.0)
Weapons Storage	323 (30.0)
Deployment Storage	215 (20.0)

GENERAL ILLUMINATION LEVELS TABLE	
Area	Lux (foot-candles)
Exterior	
POV Parking	6 (0.5)
Military Parking	6 (0.5)

- (3) Wiring shall consist of insulated copper conductors installed in rigid metallic conduit or metallic (EMT) tubing systems. Exposed conduit is permitted only in unfinished areas. Provide a green jacketed ground wire in all conduits. Conduit above the floor up to 3 meters height and exposed shall be intermediate metal or rigid steel if subject to damage. Conductor insulation shall be type TW (60 degrees C) for conductors smaller than No. 1/0 AWG and THW (75 degrees C) for conductors No. 1/0 AWG and larger; except other acceptable NFPA 70 types of insulated conductors of equivalent ampacity may be substituted.
- (4) Exit and Emergency Lighting. Exit lights (LED battery type with red letters) and emergency lights shall be provided as required by NFPA 101, Life Safety Code and ADA/UFAS 4.28.3. Allow for continued functioning for a minimum period of 90 minutes. Wall mounted battery back-up type fixtures are not acceptable. Exits shall be marked by readily visible signs in all cases where the exit or way to reach it is not readily apparent to the occupants. Signs shall be located not more than 3.5 meters from exits, internally illuminated, and the LED type consuming less than 7 watts per side. Self luminous type exit signs shall not be installed. Egress lighting to be provided at 11 lux in accordance with NFPA 101. Egress lighting shall be accomplished by selective illumination of normal lighting fixtures. Power for egress and exit lighting shall be provided by single source inverters, installed in electrical rooms. Egress and exit lights shall be circuit breaker switched from electrical rooms
- (5) Exterior Lighting. Exterior lighting system ~~should~~ shall consist of -pole mounted high pressure sodium fixtures and ~~will~~ shall be provided for Military Vehicle Parking and Privately Owned Vehicle Parking lots. Wall pack HPS area lighting ~~will~~ shall be used for exterior building illumination and for outside utility area. Recessed HPS down lights ~~will~~ shall be used at building covered entrances. Power for the parking area lighting ~~will~~ shall be from within each building. An individual photocell per parking area, that is accessible with an 2.4 M step ladder, and a lighting contactor located inside buildings ~~will~~ shall control parking area lighting.

#### 3.5.6 Building Power

- (1) All branch circuit panelboards that are not in the same room as the MDP shall have main breakers. Branch circuit panelboards shall be bolt-on circuit breaker type and shall have copper bus bars. Minimum size overcurrent devices for branch circuits shall be 20 amps. Ensure proper coordination and withstand ratings for all overcurrent protection devices. Phase loading shall be balanced to within 10% at all panelboards. All panelboards shall be provided with factory-mounted TVSS's. TVSS's shall comply with UL 1449 2<sup>nd</sup> Edition. In addition to these panelboards, a common branch circuit panelboard supplying critical loads, coordinated by the base, shall also be located in the electrical room.



- (2) All distribution equipment ~~and services within the buildings~~ shall be sized to allow 20% growth.
- (3) In the administrative portion of the vehicle maintenance buildings one duplex 110 volt/20 amp receptacle shall be provided every 3000 mm (12') along walls, within 1800 mm (6') of each door and for any wall space 600 mm (2') or more in width. Receptacles shall be coordinated with the furniture locations. Receptacles shall be mounted 450 mm (18") above finished floor, and switches shall be mounted 1050 mm (42") above finished floor. Ground fault protection shall be provided where required by codes. Provide receptacles for water coolers.
- (4) ~~The POL storage buildings require one exterior 120V duplex receptacles.~~ The DESB buildings shall be provided with two 120V duplex receptacles per segregated section. They should be installed on the same wall as the roll-up door.
- (5) In the Administrative portions of each vehicle maintenance building each systems furniture workstation shall be pre-wired to a dedicated outlet. The pre-wired workstation requires a dedicated 15-amp circuit. Specific location needs to be coordinated between the designer, workstation manufacturer and end user during design.
- (6) Wiring, conduits, switches, disconnects and controllers shall be provided for all equipment requiring electrical power.
- (7) Bathrooms. Provide a duplex GFI convenience outlet at each vanity.
- (8) A separate electrical room shall be provided in the buildings as shown on the Architectural plans. The electrical rooms shall be accessed from the exterior of the building. Adequate ventilation shall be provided.
- (9) Hazardous Areas - Hazardous areas are defined in accordance with Articles 500 and 511 of NFPA 70. Electrical equipment and installation methods in hazardous locations shall be in accordance with Article 501 of NFPA 70. The pit areas of the Maintenance Bays shall be Class I, Division I, and the rest of the Maintenance Bay areas shall be Class I, Division II up to .45 meter (18") AFF. The office complex is positive pressurized with respect to the maintenance bays and is not classified as hazardous. ~~The POL storage buildings shall be classified as Class I, Division I.~~

### 3.5.7 Telecommunications Systems

- (1) A communications room is required for the 4 vehicle maintenance facilities (CSSC, MARC, RSTA AND IB). This room serves as the entrance facility for all incoming communications ducts and as the main location for communications equipment. Provide minimum two 20 amp dedicated circuits. Provide plywood backboard, minimum size 1200 mm by 2400 mm, on all walls. The room shall also have normal receptacles on all walls in accordance with the NEC and/or local codes. Provide a single point ground for all communications equipment. Provide a 150mm x 600mm copper ground plate installed 300 mm above finished floor. Ground plate with #1 cu wire or larger. The resistance to ground must not exceed 25 ohms.
- (2) ~~Contractor is required to install all conduits from each communication room to each data/voice outlet; necessary cable tray or wire way; and the data/voice outlets. The Contractor's design of the data/voice layout shall be based on one outlet per every 7.43 square meters (80 SF) of usable space. The Fort Lewis Directorate of Information Management (DOIM) will provide and install the telephone cable and fiber optic (LAN connectivity). DOIM will make the cable terminations and test the system. See Standard Fort Lewis Installation Details D1 through D4 (attached at the end of section 00860) for~~

~~details on the components and configuration. Contractor is responsible for coordinating with the Fort Lewis DOIM for scheduling of work and entry onto the job site. Contractor shall provide communications raceway from each communications room to every communications outlet. Raceway may be conduit or a combination of cable tray and conduit. A voice/data outlet shall be provided for every 7.43 square meters (80 SF) in administration and office space. Locations shall be coordinated for communications outlets to be placed near power receptacles. Outlets for wall phones shall be provided in electrical and mechanical rooms, tool room, tool issue, etc. A data outlet shall be provided in the mechanical room. One voice/data outlet shall be provided in the Break Training Center (BTC) room. See the Standard Fort Lewis Installation Details, D1 through D4 attached at the end of section 00860 for details of components and configuration.~~

- (3) Exterior Communications. ~~The exterior communications duct system will be supplied and installed by the Contractor. Fort Lewis DOIM will furnish and install the telephone cable and fiber optics. The Contractor is responsible for coordinating with Ft. Lewis DOIM for all required interface, scheduling work, and extending the conduit into each communication room. Point of Contact from the base is Mr. Cliff Hawkeswood at DOIM, telephone (253)-967-6789. All coordination must go through the DOIM office. Contractor shall provide the exterior communications duct system all the telephone cable and fiber optic cables, including splices and terminations.~~
- (4) Security. A two level Intrusion Detection System shall be provided for the weapon and ComSec Vaults. The first level consists of balanced magnetic switches at doors; the second level consists of volumetric passive infrared motion detectors. Key pad and control panels for the system are located within each secure area. Interior wiring from the system's equipment is routed and connected to the telephone backboard for connection to the Military Police via the telephone system. The IDS shall be an integrated commercial Detection System (ICIDS) and fully compatible with the existing base ICIDS system. ~~The Contractor shall coordinate with the Provost Marshall, Physical Security Division, for activation.~~ The control unit shall be a Remote Control Unit (RTU) 190, manufactured by Monitor Dynamics Incorporated (MDI), a subsidiary of Ultrak. Ask for ICIDS RTU 190 for use with existing OS2 SafeNet system. The RTUs talk to a PPU which can handle up to 64 RTUs over fiber – 2 strands per RTU. Or, the RTUs can be daisy-chained over 2-pair copper RS 485. The Contractor shall coordinate with Chief of Physical Security, Tim Bradon, 253-967-9283, and Lysander Bone, Lockheed Martin, 256-880-5537, for design, estimates, and activation. Note: AR 190-11, 3-6, h, (3), Intrusion Detection Systems, says “Civilian employees whose duties involve the design, operation or maintenance of IDS require completion of a favorable National Agency Check with written inquiries (NCAI) prior to appointment to such non-critical-sensitive positions. Civilian contractor employees must possess a minimum security clearance of CONFIDENTIAL, granted in accordance with AR 380-67, paragraph 3-400.

- (5) Public Address System. A public address system with zoning capabilities and direct access microphones shall be provided for the scheduled maintenance and repair bays.

### 3.6 FIRE DETECTION REQUIREMENTS

#### 3.6.1 Design Reference Documents:

International Building Code (IBC-2000).

National Fire Protection Association (NFPA) Latest Edition of the following:



NFPA 70	National Electrical Code 1999
NFPA 72	National Fire Alarm Code 1999
NFPA 90A	Installation of Air Conditioning and Ventilation Systems 1999
NFPA 90B	Installation of Warm Air Heating and AC Systems 1999
NFPA 101	Life Safety Code 2000
NFPA 170	Symbols for Architectural and Engineering Drawings 1999
MIL HDBK 1008C	Fire Protection

Laboratory Publications:

Underwriters Laboratories (UL)

Factory Mutual Approval Guide

National Electrical Manufacturer's Association

Institute of Electrical and Electronic Engineers

American National Standards Institute

### 3.6.2 Design Requirements

Design requirements shall be Class A fire protection system. A Fire Protection Engineer licensed in the United States of America shall design the fire sprinkling and fire alarm system. The hydraulic calculations and complete fire protection design shall be submitted for review prior to installation.

- (1) A fire detection and alarm system shall be provided in compliance with NFPA 72. The system shall be the addressable device type. Detection shall be provided for all areas, including ~~drop above suspended ceilings, where the ceiling space is accessible~~. Detection and alarm shall be designed with the requirement that the buildings will be sprinkled in accordance with MIL-HDBK-1008C.
- (2) Detection in the facility is by photoelectric smoke detectors , combination fixed temperature/rate-of-rise heat detectors and manual pull stations. A radio transmitter for alarm/trouble transmission ~~will~~ shall be provided for each facility. The transmitter shall be fully compatible with the existing King Fischer receiver-processor used on Fort Lewis. (King-Fischer Co., 2350 Foster Ave., Wheeling IL, 60090, phone ~~(312) 398-7100 (847) 398-7100~~ (www.kfco.com) or G.H. Harlow Co., Inc, 15757 SW 74<sup>th</sup> Ave., Suite 550, Tigard, OR 97224, phone (503) 620-9547).
- (3) The transmitter system shall include the transmitter, associated interface, antenna, antenna discharge unit, antenna mast, all interconnections, wiring, conduit, grounds and weatherproof building penetrations. All equipment shall be installed in accordance with manufacturer's instructions.
- (4) The transmitter shall transmit troubles and alarms at the frequency of 138.925mHz. Transmitter shall be solid state and contain an integral power supply, charger and sealed batteries. The batteries shall be capable of sustaining operation in all modes for not less than 24 hours.
- (5) The transmitter shall transmit a trouble signal in lieu of a test signal whenever the transmitter is in a trouble condition.

- (6) The interface shall consist of all equipment necessary to connect the transmitter to the fire alarm control panel so fire alarms and one common trouble signal will be appropriately transmitted.
- (7) The transmitter shall have its own antenna. Antenna shall be of suitable strength to withstand ice and 201 km/hr wind load. Antenna shall be stainless steel, 5/8 wavelength, omni-directional, vertically polarized and with radial ground plane elements. The ground plane elements shall be no less than 600 mm from grounded metal surfaces. The antenna mast, mounting brackets, and bracing shall be of a configuration appropriate to the structure on which the antenna is mounted. The antenna lead shall be provided in galvanized rigid steel conduit.
- (8) Pull stations ~~will~~ shall be mounted in dry locations where temperatures do not fall below 4.5 degrees Celsius. Use plastic main bodies, and install a rubber gasket between the mounting metal plate and the box.
- (9) Fire alarm panels, transmitters, IDS & UPS units, and other sensitive electrical or electronic equipment shall be installed in dedicated electrical equipment rooms, readily accessible to maintenance personnel, independent of building occupants. These rooms shall be accessible from exterior of facility, separated from mechanical spaces or other areas subject to excessive temperature and moisture.

END OF SECTION

# Standard Fort Lewis Multi-Media Communication outlet Labeling

## DETAIL D-1

CR = Communication room #. Label each multimedia box with CR# if more than one communication room is used on each floor.

All Data port numbering shall be sequential from jack to jack.

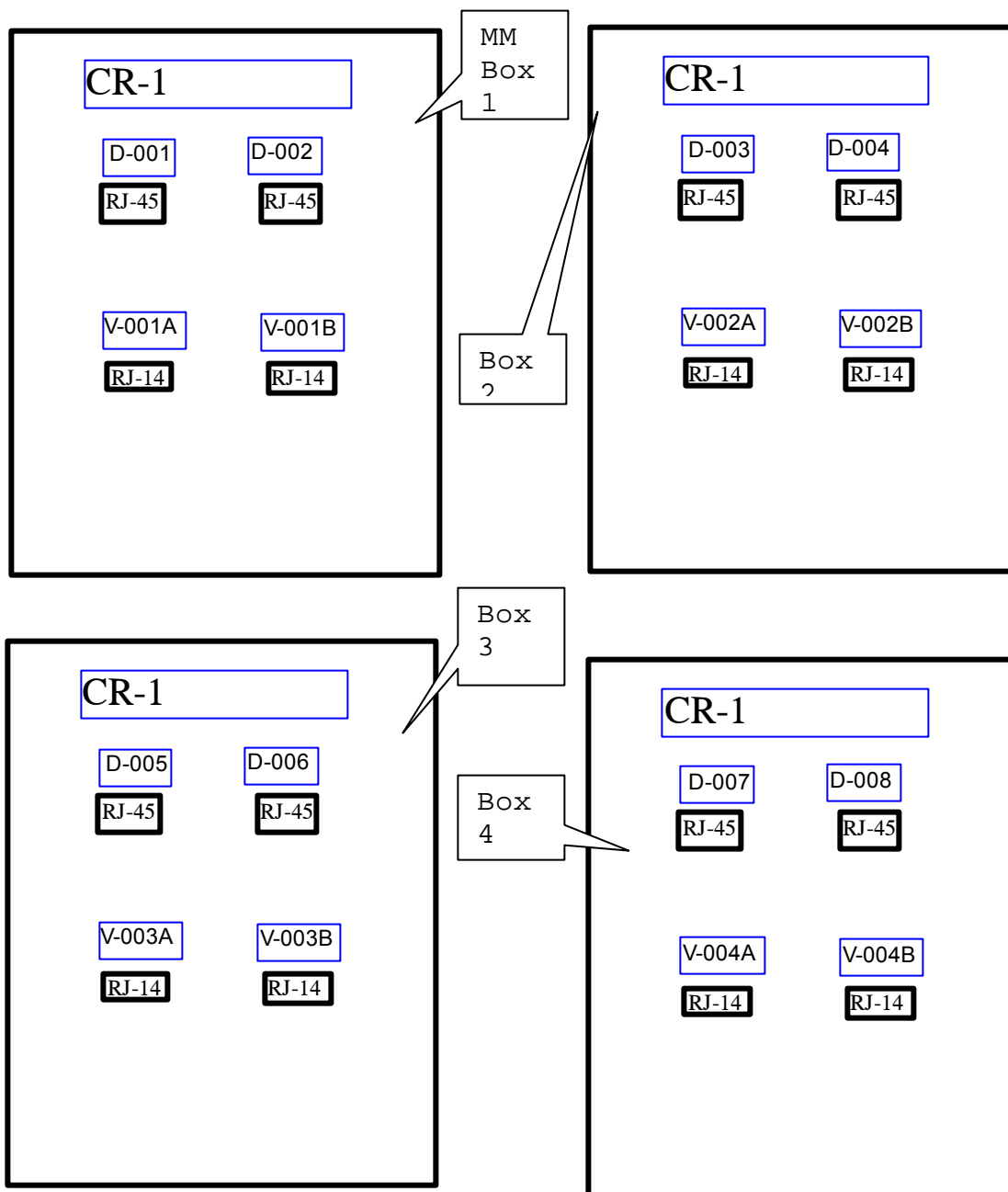
Both Voice jacks in each Multi Media box will use same number with A or B designation in each multimedia box when a single 4 pair cable is used.

Use pair 1 for A (White Blue pair) use pair 2 for B (white Orange pair) pair 3 & 4 to remain un-terminated.

Room numbers change and are not to be a part of the numbering system.

D = Data

V = Voice



ATTCH-1

Floor Designation is not required unless outlet is wired to a communication room located on a different floor.  
Communication room designation required if more than one-communication rooms exist on each floor.

# Standard Fort Lewis Multi-Media Communication outletDETAIL D-2

Two Category 5e, 4 pair cables, wired to 110 type RJ-45 category 5e patch panels located in 19" equipment cabinet in the communication room.

Category 5e, 4 pair communication cables, wired to 66M1-50 punch blocks located on backboard in communication room.

1" EMT conduit with pull string to nearest Wire-way or communication room.

Top two Jacks: modular eight pin RJ-45, Category 5e rated Data jacks, Wired in compliance with EIA/TIA 568A.

Bottom two Jacks: Six pin RJ-14 voice grade jack wired to 66M1-50 blocks mounted on 3/4" Plywood Backboard in communication room. Not EIA/TIA 568 or 569 compliant. Pair 1&2 to left and Pair 3&4 to right jack.

Modular communications single gang face plate installed on double gang electrical box. Plastic is preferred if allowed by building code.

Fort Lewis standard design requires two strands of single mode fiber optic installed to each outlet **WHEN SPECIFIED**.  
If specified a six-position face plat will be required.  
In the alternative providing large enough conduit complete with pull string where no current fiber optic requirement has been identified and funding is unavailable.

**Additional pull string required from each Multimedia box to wire-way or communication room if wire-ways are not used.**

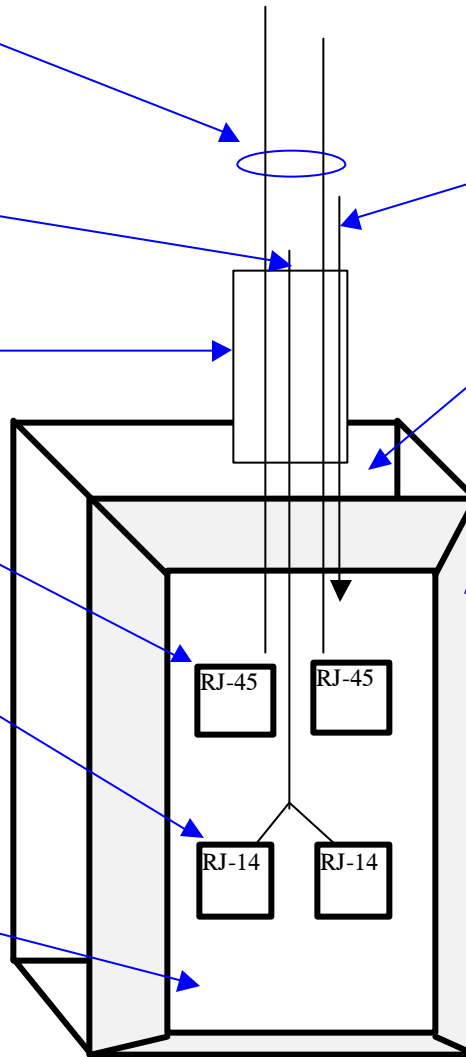
Single or Double Gang electrical wall box may be specified. Plastic is preferred if allowed by building code.

Reducing ring to be used to reduce from double gang box to single gang faceplate when double gang box is required.

Must match faceplate in color and texture or is hidden in wall.

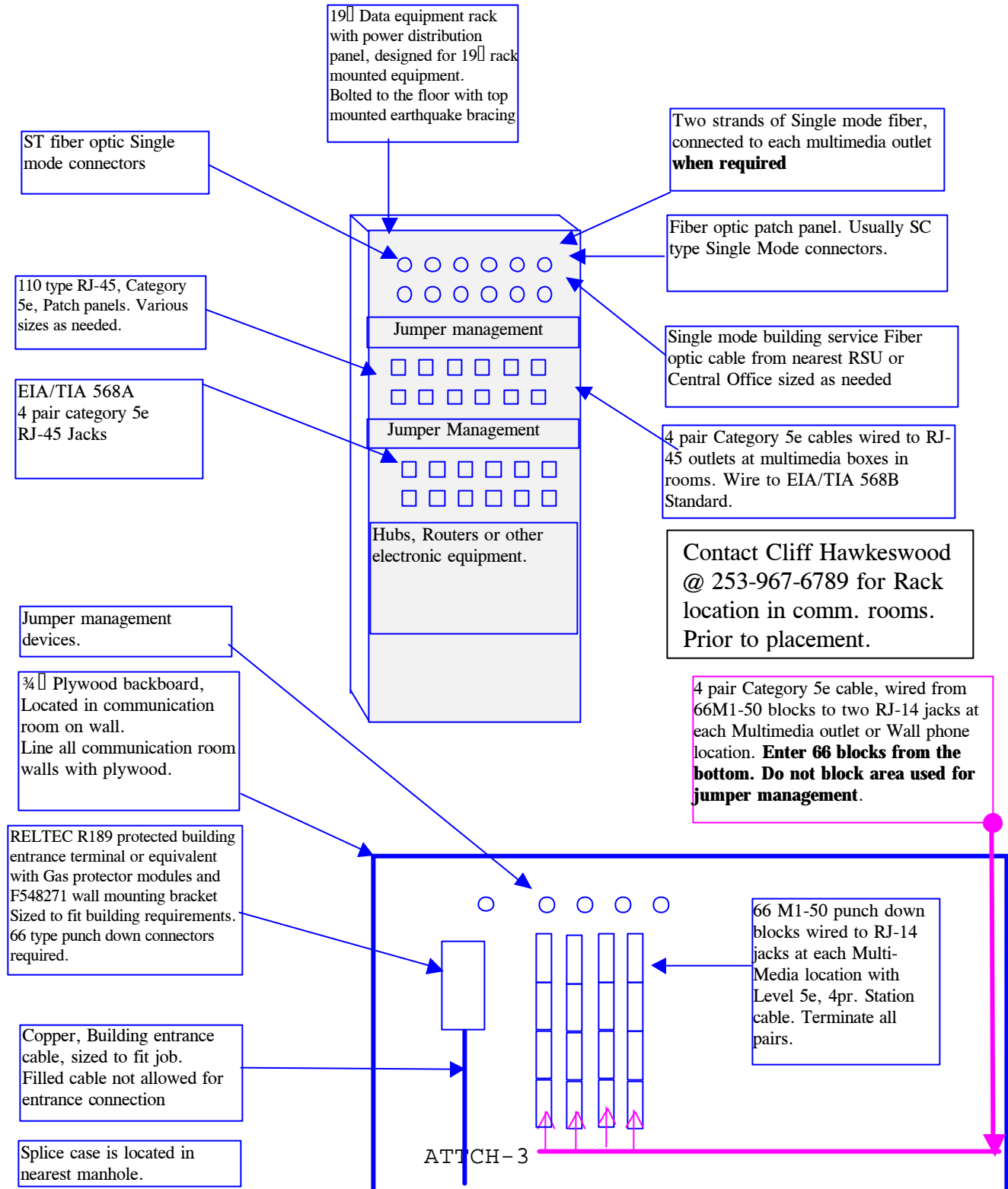
**Individual modular jacks capable of being removed individually from the faceplate must be used for ease of servicing and individual replacement of damaged jacks.**

**Pre-wired faceplate or dual modules will not be accepted.**



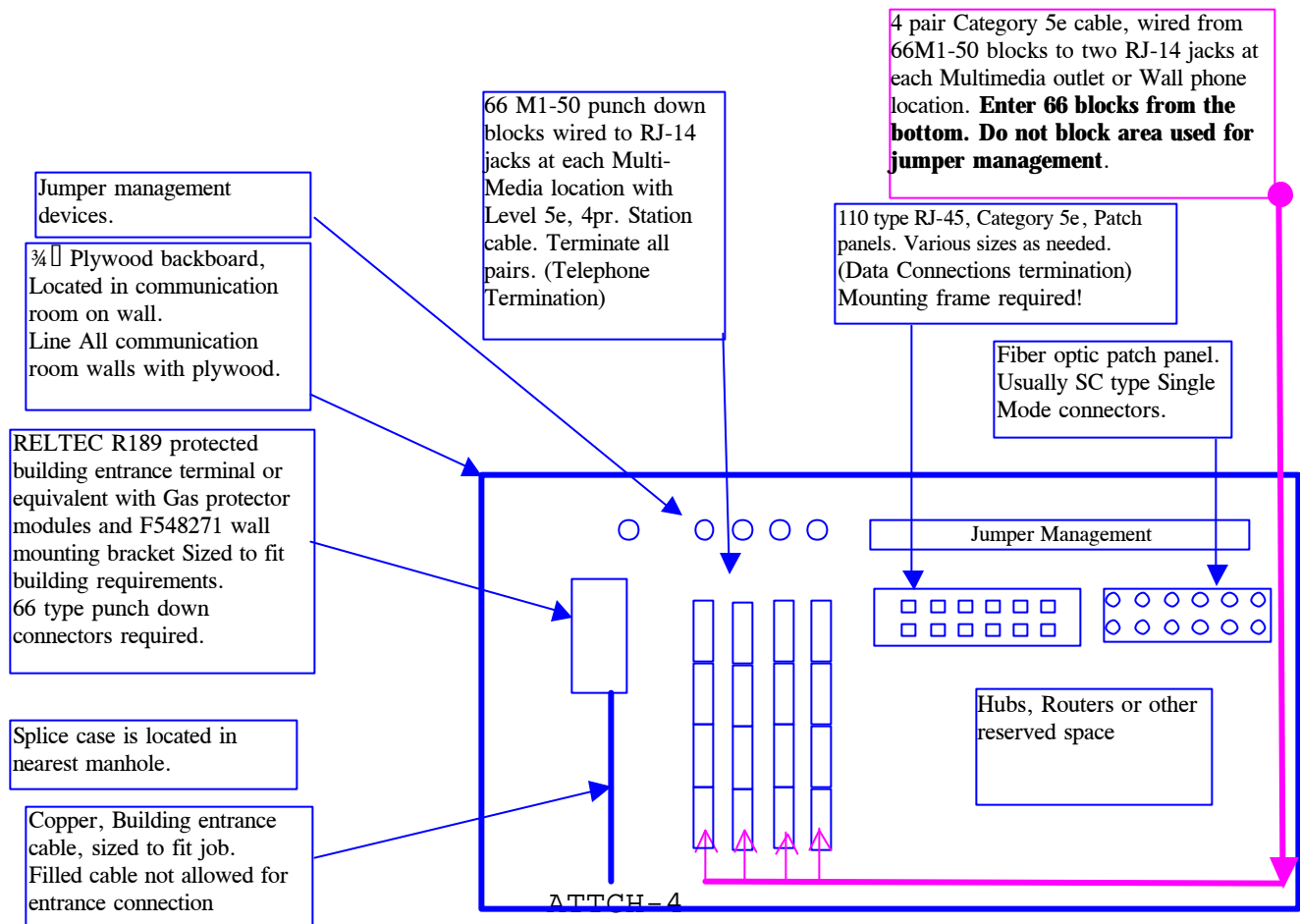
Fiber optic ST connectors. Would be placed in faceplate when specified.

# **Typical Fort Lewis communication room layout** **DETAIL D-3**



Typical Fort Lewis communication room layout  
**Small Wall Mount installations if approved**

**DETAIL D-4**



## SECTION 00890

### OUTLINE SPECIFICATIONS

1. General. These outline specifications cover the range of products/work to be included in the project. The goals are a) to indicate the areas of work in this project; b) to broadly indicate the work within each section, and c) to indicate minimum acceptable requirements and to further detail the minimum requirements. These outline specifications do not attempt to address product approval, shop drawings, actual installation or other items covered in the referenced specifications.

Included in this RFP there are also some specifications fully developed. These complete specifications shall be incorporated in the design by the Contractor without any further editing.

This project shall be 100% asbestos free. No asbestos, asbestos containing materials, lead in paint, or PCB in light ballasts in any amounts shall be allowed.

The exterior wall sections, including the framing, waterproofing, and exterior and interior finishing, shall satisfy the design requirements for fire protection, heat loss, seismic and wind loads, security, force protection, and durability.

Manufacturers' names are provided to indicate the properties and quality of the product. It is not intended to restrict the Contractor's selection of other manufacturers that provide an approved and equal product.

2. Specifications. Guide Specifications listed below are Unified Facilities Guide Specifications (UFGS) and are to be used for all military construction

The Proposer/Contractor is to be aware that these specifications represent the latest versions available at the time of issue of this RFP and shall be used in preparing specifications for this project. Specifications are available in electronic format from the Construction Criteria Base (CCB) Internet homepage: (<http://www.ccb.org/ufgs/ufgs.htm>).

COE Seattle District prepared guide specifications (designated NPS) are located at the Seattle District Corps of Engineers Internet web site (<http://www.nws.usace.army.mil/specs/specmain.htm>). Use of these specifications shall be limited to obtaining specific information for editing the UFGS.

Fort Lewis specifications are available at the Internet in "Base Design Standards", accessible through Seattle District home page <http://www.nws.usace.army.mil/>, "Design Criteria", Ft. Lewis "Facility Design Policy/Base Design Standards". Requirements of these Base Design Standards shall be incorporated into the project specifications.

For work not covered by the listed or included specifications, the Proposer/Contractor is to use other recognized industry sources of specifications unless noted otherwise.

Note: 1. Specification sections listed are UFGS unless otherwise indicated.

2. Throughout this RFP any reference to CEGS shall be read as reference to UFGS.

## **DIVISION 1: GENERAL REQUIREMENTS**

### **01452 Special Inspection for Seismic-Resisting Systems**

Provide special inspection in accordance with UFGS 01452A.

## **DIVISION 2: SITEWORK**

### **02220 Demolition**

Provide equipment and systems in accordance with UFGS 02220a and as follows:

All demolition work shall conform to EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual. Work includes demolition, removal, and salvage of identified items and materials. Salvage shall be pursued to the maximum extent possible and shall be disposed of as directed. Burning and explosives will not be permitted. Provide equipment and labor necessary to safely demolish and remove identified utility services and flexible pavement.

### **02230 Clearing and Grubbing**

Provide equipment and systems in accordance with UFGS 02230a and as follows:

Site Preparation recommendations shall be as provided in the Geotechnical Report (see Appendix B). Any recovered soil suitable for topsoil, after clearing and grubbing operation, shall be stockpiled on site and shall be used for final grading of planting areas as described in Specification 02921 and Section 00800, Part 2, paragraph 3.1.4 (4). The Contractor shall dispose of all organic material, resulting from clearing and grubbing operations, at a legal location outside Government-controlled land. The Contractor shall obtain approval of haul route and disposal site.

### **02300 Earthwork**

Provide equipment and systems in accordance with UFGS 02300a and as follows:

Perform detailed site civil design required to establish elevations necessary for site preparation, excavation, borrow, filling, backfilling, compacting, and finished grading to construct the pavements and other site work. All fill material shall be free of contamination. The Contractor shall submit a proof of verification of the source of fill material or results of analytical testing. All work shall be in compliance with the Geotechnical Report.

### **02315 Excavation, Filling, and Backfilling for Buildings**

Provide equipment and systems in accordance with UFGS 02315a and as follows:

Provide excavation, filling, backfilling, compacting, and finished grading necessary to construct the finish grades indicated for structures. All work shall be in compliance with the Geotechnical Report. Provisions for dewatering the building excavation, if required, shall be included.

### **02316 Excavation, Trenching and Backfilling for Utilities Systems**

Provide equipment and systems in accordance with UFGS 02316a and as follows:

Perform excavating, preparation of pipe-laying surface, pipe bedding, backfilling and compaction. Requirements for underground mechanical and electrical work. Installation of marking tape for identification and detectability. All work shall be in compliance with the Geotechnical Report. No open trench cuts



crossing roads are permitted, except as shown on electrical drawings. Provisions for dewatering the utility excavation, if required, shall be included.

### **02510 Water Distribution System**

Provide equipment and systems in accordance with UFGS 02510a and as follows:

Provide materials for and installation of water system to provide for domestic use and required fire protection. Provide water service lines of ductile-iron pipe or polyvinyl chloride (PVC) plastic water main pipe, as required by Ft Lewis design standards. Provide water service appurtenances as required.

### **02531 Sanitary Sewers**

Provide equipment and systems in accordance with UFGS 02531a and as follows:

Provide sanitary sewer system including pipelines, manholes, and clean outs connect to the existing sanitary sewer system. Provide mains or laterals of cast iron, concrete, or polyvinyl chloride (PVC) plastic pipe. Manhole inverts shall be channeled with a 2 percent cross slope. Provide surface clean outs surrounded by 600 mm square cement concrete pad in landscape areas and steel collars in vehicular pavement areas.

### **02556 Gas Distribution System**

Provide equipment and systems in accordance with UFGS 02556a and as follows:

Gas piping system shall be from the point of delivery, defined as the outlet of the meter set assembly as provided by Puget Sound Energy Services. The contractor shall contract Puget Sound Energy Services to install and own meter set assemblies and underground piping to the buildings. See Section 00860 - II, paragraph 3.4.4 for pricing details.

The Contractor shall provide polyethylene piping (separate from the natural gas piping to be installed by PSE) from the point of connection (see civil drawings) to each building. Piping shall be sized for a supply pressure of 275 kPa (40 psig). This connection shall be tied into the building piping system, downstream of the gas utility meter and shall be provided with a lockable manual valve.

### **02630 Storm-Drainage System**

Provide equipment and systems in accordance with UFGS 02630a, with Stormwater Manual, Fort Lewis Public Works, Fort Lewis, WA, dated January 27, 1996, and as follows:

Provide materials for and the installation of required site storm drainage system and connection to existing storm drainage system. The system shall include storm drain lines, branches, catch basins and manholes. Storm drain lines and branches shall be polyvinyl chloride (PVC) plastic, ductile-iron, or concrete pipe, as required by Ft Lewis design standards. Subsurface drainage, foundation drainage and/or under drainage system shall be perforated polyvinyl chloride (PVC) plastic piping. All underground perforated drainage systems shall include one layer of filter fabric wrapped around the pipe with a 150 mm overlap. Filter fabric shall be a pervious material manufactured into a non-raveling fabric with uniform thickness and strength meeting the requirements of the UFGS specifications. Catch basins and manholes shall be constructed according to Washington State standards and UFGS specifications. Storm drainage lines shall not be corrugated and must be smooth on the inside surface. All joints shall be watertight.

Fort Lewis standard details shall be utilized.

### **02722 Aggregate and/or Graded-Crushed-Aggregate Base Course**

Provide equipment and systems in accordance with UFGS 02722a and as follows:

Provide materials and labor necessary for construction of base course for flexible pavement. Perform placement, compaction, and finished grading required to obtain the finished grade elevations for top of base course. Crushed aggregate materials shall be in compliance with the Geotechnical Report. All work shall conform to the Geotechnical Report.

#### **02741 Hot – Mix Asphalt (HMA) for Roads.**

Provide equipment and systems in accordance with UFGS 02741a and as follows:

Provide a binder and wearing course of plant mixed asphalt concrete (AC) placed on a prepared base in accordance with the Geotechnical Report. AC shall conform to the requirements stated in the Geotechnical Report. Provide tack coat for connection to existing flexible pavement and other applicable areas.

#### **02763 Pavement Markings**

Provide equipment and systems in accordance with UFGS 02763a and as follows:

Furnish and install pavement markings along the roadway surface as required for parking delineation. Parking delineation, arrows, stop bars, crosswalks and barrier strips shall be painted. Blue 100 mm x 100-mm thermoplastic street markers shall be provided for ease in finding fire hydrants, offset to side of hydrant.

#### **02770 Concrete Sidewalks and Curbs and Gutters**

Provide equipment and systems in accordance with UFGS 02770a and as follows:

Provide materials and labor necessary for construction of cement concrete sidewalks, and rolled curb and gutter. Provide aggregate base course for rigid pavement. Finish surface for concrete sidewalks shall be a broomed finish to achieve a non-slip surface. Sidewalks shall be a minimum of 100 mm thick. Rolled curb shall be cast in place cement concrete. Rolled curb shall be according to design detail and typical rolled curb described in the Fort Lewis Design Standards. Provide expansion joints between curbs and sidewalks and between buildings or walls and sidewalks. Provide expansion joints in all concrete sidewalks, curbs, and gutters at 9 meters maximum spacing and extended joints continuous through sidewalks, curbs, and gutters. Provide steel dowel reinforcing connecting sidewalk slabs at all expansion joints. Provide scored control joints at 2 meters maximum spacing.

#### **02811 Irrigation Sprinkler System**

*General:* Final designs shall include verification of the size of existing water service, flow and static pressure.

The system shall be underground, fully automatic and consistent with all local codes, including backflow prevention, and standard practices. All sprinkler heads shall be pop-up type, bubblers, microsprays, or drip irrigation emitters. Above ground heads on risers will not be approved.

*Materials:* New irrigation system components shall include, but are not necessarily limited to: water meters and pressure regulators (if required), backflow prevention devices, gate valves and ball valves, remote control valves, manual drain valves, quick couplers, piping, sleeves, fittings, sprinkler heads, microsprays, drip emitters, automatic controllers and controller enclosures, and wiring. Materials shall conform to applicable standards of the American Society for Testing Material and Underwriter's Laboratory.

All mainline and lateral line piping shall be PVC, Schedule 40. Sprinklers shall have plastic bodies and a pop-up stem of 150mm in low groundcover and shrub areas, and 300mm in tall groundcover areas. Remote control valves shall be commercial grade plastic and shall be located below grade in standard valve boxes.

Backflow devices shall conform to local plumbing codes. Controllers shall provide at least two unused stations for future expansion of the system.

*Installation:* Irrigation work shall include excavation, trenching and backfilling, installation of all components, testing and inspection, clean up and maintenance of each system until final acceptance of the project. Place all piping deep enough to prevent freeze damage and provide adequate means for winter drainage of the systems. Bedding material for irrigation pipe shall be clean sand or pea gravel conforming to the following:

Sand:

Sieve Size	Percent Passing
13mm square	90-100
6mm square	65-100
U.S. No. 10	40-100
U.S. No. 50	3-30
U.S. No. 100	0-4
U.S. No. 200	0-3

Pea Gravel:

Sieve Size	Percent Passing
13mm square	90-100
10mm square	40-90
U.S. No. 4	5-30
U.S. No. 200	0-0.5

All percentages by weight.

*Backfill in trenches above irrigation piping shall be free of rock or cobbles over 25mm in diameter.*

Trenching within the drip line of existing trees to be preserved shall be done by hand. All irrigation mainlines and laterals passing under roadways or paving shall be placed in PVC, Schedule 40, sleeves. Size of sleeves shall be twice the diameter of the pipe passing through it. Existing roadways shall not be cut to accommodate new irrigation piping. Paving which is damaged shall be restored to match existing when disturbed due to trenching or irrigation system installation.

Provide head-to-head coverage of all landscape areas and separate zones for shrub and grass areas. Include at least one quick coupler per irrigation zone.

*Maintenance:* The maintenance period of the irrigation system shall coincide with the maintenance period for landscape planting. The Contractor shall make repairs, replacements and adjustments to the systems in order to keep it fully functional and operating as designed, sustaining the health and vigor of the plant materials.

*Guarantees and Replacements:* The Contractor shall warrant materials against defects and guarantee workmanship for one full year following the final acceptance of all work by the Contracting Officer. Damage beyond the reasonable control of the Contractor shall not be repaired at the Contractor's expense.

#### **02821a Fencing**

Security fence shall be 2,130 mm galvanized steel chainlink with top rail and three-strand barbed wire on galvanized supports.

#### **02921 Turf/Grass Areas**

Turf (grass) areas shall be seeded as per base approved seed mix. Hydroseeding is an acceptable method for seeding. Topsoil shall be applied at a minimum depth 100mm and topsoil shall be thoroughly bonded to the sub soils. Topsoil stripped from the site, stockpiled and re-spread shall be free of stones greater than 13mm in any dimension. Once stockpiled topsoil has been screened, remaining topsoil material shall be amended by mixing in composted, fine-particle organic matter as recommended by soil testing to achieve 20% by volume or 7% by weight. Acceptable sources of organic matter shall be as described in the CEGS. PH adjuster shall be provided as recommended by soil testing results to register between 5.5 and 7.5. Additional topsoil shall be provided if quantities of stripped topsoil prove to be insufficient.

Delivered topsoil shall meet the following requirements: Topsoil shall be sandy loam as described by USDA textural class. Topsoil shall have a maximum particle size of 19mm inch with a maximum of 3 percent retained on a 6mm screen and a minimum of 5 percent passing through a 120 mesh screen. Topsoil shall contain 5-20 percent by volume and 2%-7% by weight of mixed, composted, fine-particle organic matter. Topsoil shall be obtained from well drained areas and shall not contain more than 5 percent water by volume. The topsoil shall be free from debris, noxious weeds, rhizomes, roots, toxic substances, or any other material that may be harmful to plant growth. Decomposed wood derivatives (ground bark, sawdust, or other wood waste) used in the topsoil shall be free of weeds, weed seeds, and sticks and fully decomposed a minimum of 6 months or stabilized with nitrogen. The pH shall be between 5.5 and 7.5. Soluble salts shall not exceed 500 ppm. Each delivery shall be accompanied by a guaranteed statement of analysis listing the percent of organic matter and the pH.

An acceptable stand of turf shall be defined as a thick, healthy and strong stand of turf and ground cover with uniform cover and deep root development throughout all designated areas with a minimum of 150 plants per square foot and no bare spots greater than 100mm. Grass seed mix shall be Creeping Red or Chewings Fescue (48% min.), and Turf-type Perennial Ryegrass (48% min.).

The seed mix shall not contain annual ryegrass or bluegrass species. Weed seed shall not exceed 1 percent by weight of the total mixture and shall be free of restricted and prohibited noxious weed seed. The seed shall also be free of crop seed, and inert matter shall not exceed 3% by weight of the total mixture. The Contractor shall provide temporary winter grass cover in areas where permanent seeding is delayed because of the season or construction staging. Temporary seed shall consist of Perennial Ryegrass (100%).

#### **02930 Trees, Shrubs, Ground Covers, and Vines**

*Grading and Soil Prep:* For all landscaped areas finish grades shall be free of undulations, irregularities or low spots that will collect standing water. Provide positive drainage, with not less than two- percent surface slope away from walls and structures and toward roadways and catch basins. The Contractor shall supply additional topsoil that is clean, friable and free of debris, rock, and sticks as needed to achieve finish grades in all landscape areas.

*Plant Materials:* All plants supplied by the Contractor shall be healthy, fully foliated when in leaf, well-branched and typical in form for its species.

Groundcover shall be installed as 1-gallon containers (minimum size) at a spacing on center that will provide 90% coverage within two full growing seasons (March to October is one growing season) after planting. The minimum plant sizes shall be #5 (5 gallon) for shrubs, 63mm caliber for deciduous trees, and 3M height for conifers.

*Maintenance:* The Contractor shall maintain all newly installed plantings within the site limits from the time of installation of all plant materials until initial acceptance of all landscape work by the Contracting Officer. Maintenance shall include adequate watering of all planted areas, straightening, weed control, mulching, fertilizing of plant materials, and pruning of dead, damaged or crossed branches. All planting shall be guaranteed to remain healthy throughout the maintenance period. Dead or dying plants shall be removed immediately and replaced in kind as soon as seasonal conditions permit.

After initial acceptance of planted areas, a minimum 120-calendar day establishment period is required. The establishment period shall include the following:

1. Continuous eradication of weed growth (including all areas identified by the Government), prevention of weed seeding and plant disease.
2. Watering to maintain the equivalent of one inch absorbed moisture delivered each week.
3. Providing at least one application of fertilizer during the establishment period.

The Contractor shall provide complete maintenance for all planted areas for a minimum of 120 days after provisional final acceptance of the project or area/site. Within seven (7) days prior to the end of this maintenance period, the Contractor shall remove weeds from all planted areas and fertilize all new plantings.

*Warranties:* All trees and plants shall be guaranteed for a period of 365 days after initial acceptance of the project or area.

At end of warranty period, remove and replace trees, shrubs, and groundcovers found to be missing, dead or in an unhealthy condition. Replacements shall be made as soon as seasonal conditions allow following end of warranty period. Plants shall be required to be replaced no more than one time under this warranty.

Damage determined beyond the reasonable control of the Contractor shall be repaired at the Owner's expense.

### **DIVISION 3: CONCRETE**

#### **03100 Structural Concrete Formwork**

Provide equipment and systems in accordance with UFGS 03100a and as follows:

See Section 03300. Provide form materials including forms, ties, releasing agents, and void materials.

#### **03150 Expansion Joints, Contraction Joints, and Waterstops**

Provide equipment and systems in accordance with UFGS 03150a and as follows:

See Section 03300. Provide expansion joint filler, accessories and waterstops.  
Proposed joint fillers to be submitted for approval.

#### **03200 Concrete Reinforcement**

Provide equipment and systems in accordance with UFGS 03200a and as follows:

See Section 03300. Provide reinforcing bars, dowels, welded wire fabric; wire ties, and supports.

#### **03300 Cast-In-Place Structural Concrete**

Provide equipment and systems in accordance with UFGS 03300 and as follows:

No polymer resins with styrene shall be used for any concrete floor coating. No cone ends shall occur on faces of concrete in exposed-to-view surfaces. Chamfer all external corners. Furnish formwork in largest practicable sizes to minimize number of joints. Support reinforcement with approved chairs, spacers or ties. Provide joint and waterstop location layouts for approval.

Concrete shall have a minimum 28-day compressive strength of 27.5 MPa (4,000 psi), except interior slabs shall have a minimum 28-day compressive strength of 34.5 MPa (5,000 psi). Exterior slab on grades shall have a 28-day minimum flexural strength of 4.1 MPa (600 psi).

In addition to concrete, provide curing materials, non-shrink grout, bonding agent, floor hardener, dry-shake floor topping, perimeter insulation, capillary moisture barrier, and vapor barrier.

### **03330 Cast-In-Place Architectural Concrete**

Provide materials, equipment and systems in accordance with UFGS 03330a and as follows:

Cast-in-place concrete walls of Weapons and Comsec Vaults exposed to Corridors shall have an architectural finish with close tolerances and defined requirements for minimization of surface defects. Utilize form liners to provide a shallow texture for visual interest. Walls of maintenance pits shall also have an architectural finish. Pit surfaces to be cast against a flat, smooth non-porous surface. Protect concrete from staining and discoloration. Provide surface sealer on all areas to remain exposed in finished construction as early in construction as possible to avoid staining by weather and other trades.

## **DIVISION 4: MASONRY**

### **04200 Masonry**

Provide materials, equipment and systems in accordance with UFGS 04200a and as follows:

Concrete masonry units to be split face and smooth face as indicated on drawings. Units exposed to the exterior shall be integrally colored. CMU shall be manufactured using all white cement and carefully selected aggregates to provide coloration that meets North Fort and Base Design Standards requirements. Lintel and bond beam units shall be used. Use steel lintels at openings in veneer walls.

Conduct continuous inspection. Testing of mortar, grout, masonry cores and units is required. Testing of units for efflorescence is required. Include descriptions of construction requirements and limitations for cold and hot weather construction.

Provide reinforcement, flashing materials, control and expansion joints, weep holes, veneer ties, and insulation. Tool finish exposed joints to a dense concave surface or other acceptable weather joint. Clean masonry with approved cleaners by unit masonry manufacturer and complying with masonry manufacturer's directions and technical bulletins. Remove all cleaner residues from masonry. Seal all exterior CMU surfaces, and exposed interior surfaces in repair and maintenance bays, with silane or siloxane based high solids, clear sealers.

### **04220 Nonbearing Masonry Veneer/Steel Stud Walls**

Provide materials, equipment and systems in accordance with UFGS 04220a and as follows:

Concrete masonry units shall be sampled and tested for efflorescence in accordance with ASTM C 67 and the rating shall be: "not effloresced". Calculations demonstrating the insulation provides the specified U-value for heat transmission of the completed exterior wall construction shall be submitted for approval. This specification section includes: CMU, mortar, joint reinforcement, cold-formed steel framing, insulation, exterior sheathing, moisture protection, veneer anchors, and connections.

## **DIVISION 5: METALS**

### **05090 Welding, Structural**

Provide materials, equipment and systems in accordance with UFGS 05090a and as follows:

All welds exposed in finish work shall be ground smooth. Defective or rejected welds shall be cut out and replaced.

### **05091 Ultrasonic Inspection of Plates**

Provide equipment and systems in accordance with UFGS 05091a and as follows:

Inspection and testing of shop and field welding shall be by an approved, qualified welding inspector. The welding inspector shall certify all reports and make a record of all welds. The welding inspector may use ultrasonic testing or any other approved aid to assure the adequacy of the weld. Welding inspector shall be certified to inspect in accordance with AWS D1.1.

### **05120 Structural Steel**

Provide materials, equipment and systems in accordance with UFGS 05120a and as follows:

Provide mill analyses and test reports. A testing laboratory shall be used for all required tests and inspections. Provide and install all structural steel, tubing, and pipe, high strength bolts, carbon bolts, nuts, washers, and paint.

### **05210 Steel Joists**

Provide materials, equipment and systems in accordance with UFGS 05210a and as follows:

Manufacturer's certification required. Provide all accessories, extended and special ends and ceiling extensions as required. Do not apply construction loads until bridging and anchorages are completed.

### **05300 Steel Decking**

Provide materials, equipment and systems in accordance with UFGS 05300a and as follows:

Steel Roof Deck: Provide fire resistance label and acoustical insulation strips as required. Provide adjustment plates, closure plates, accessories, and lateral and uplift attachment. Touch-up shop paint after installation. Clean field welds and abraded areas.

### **05400 Cold Formed Steel Framing**

Provide materials, equipment and systems in accordance with UFGS 05400a and as follows:

Include all material requirements for studs, tracks, bridging and other miscellaneous light gauge framing. Identify component size and material properties for each type and variety. All stud walls to be non-loadbearing. Provide bracing for all stud walls that do not extend to structure.

### **05500 Miscellaneous Metal**

Provide materials, equipment and systems in accordance with UFGS 05500a and as follows:

Welds to be continuous, ground smooth and flush. Exposed joints to be "hairline" quality. Miscellaneous metals can include the following: screens, gratings, shelf angles, ladders, ladder cage, handrails, guardrails, pipe sleeves, pipe bench stanchions, pipe post bollards, water heater supports, sill angles, corner guards, access doors and panels, expansion joint covers, seismic joint covers, trench covers, jambs, and backing for overhead rolling doors. Separate miscellaneous metal from dissimilar metals and from products containing lime or other substances, which will cause damage (galvanic corrosion) to occur. Include material and method of attachment to each substrate encountered for all miscellaneous metal components. Include finish requirements or reference finishes located in other specification sections.

## **DIVISION 6: WOODS & PLASTICS**

### **06100a Rough Carpentry**

Provide equipment and systems in accordance with UFGS 06100 and as follows:

Material shall bear the grade mark, stamp or other identifying marks indicating grades of material and rules of standards under which produced. Flush mounted accessories, builders hardware, casework, projection screens and marker boards shall be secured to wood blocking. Minimum size acceptable is 50 mm X 100 mm (2 inch X 4 inch) for dimensional lumber or 12 mm (1/2 -inch) thickness for plywood. Blocking shall be rigidly attached to minimum of two studs. Use of gauge metal banding, hollow wall, or gypsum wallboard anchors is expressly forbidden.

### **06200a Finish Carpentry**

Provide materials, equipment and systems in accordance with UFGS 06200a and as follows:

Materials shall bear the grade mark, stamp or other identifying marks indicating grades of material and rules or standards under which produced. Finish carpentry includes trim, chair rails, windowsills, built-in cabinets, counter tops, plastic laminate, and utility shelving. Coordinate with Section 12320.

## **DIVISION 7: THERMAL & MOISTURE PROTECTION**

### **07110 Bituminous Dampproofing**

Provide materials, equipment and systems in accordance with UFGS 07110a and as follows:

Bituminous dampproofing shall be provided on the exterior face of structural CMU walls used in veneer wall systems. Dampproofing shall be fibrated type.

### **07132 Bituminous Waterproofing**

Provide materials, equipment and systems in accordance with UFGS 07132a and as follows:

Submit manufacturer's data including technical information, which indicates full compliance with this section and manufacturer's installation instruction. Bituminous waterproofing shall be provided on the exterior of



perimeter foundation walls ~~and the exterior of the perimeter wall of maintenance pits located in scheduled maintenance bays.~~

#### **07210 Building Insulation (Non CEGS Specification)**

Provide materials, equipment and systems consistent with language for similar materials in Specification 07220 and as follows:

Polyisocyanurate rigid insulation ASTM C1289, Type I or II, and Class 1 (having a minimum recovered material content of 9 percent by weight of core material in the polyisocyanurate portion). For polyisocyanurate the maximum design R-value per 25 mm of insulation used shall be 7.2. Facings shall be non-asphaltic, glass fiber reinforced.

Provide thermal resistance values as indicated on drawings. Mechanical attachment as recommended by insulation manufacturer. Vapor Barrier per ASTM D4397 and CEGS, 6-mil thick polyethylene sheeting. Vapor Barrier coverage shall be 100% with seams lapped to the next framing member, sealed with an approved sealant.

Foundation perimeter insulation shall be extruded polystyrene.

Building insulation shall comply with building code limitations on flame spread and smoke generation as appropriate to type, location and fire rating of assembly.

#### **07220 Roof Insulation**

Provide materials, equipment and systems in accordance with UFGS 07220a and as follows:

Provide polyisocyanurate rigid board insulation for use above a roof deck. Polyisocyanurate insulation shall conform to ASTM C 1289, Type II, and Class 1 (having a minimum recovered material content of 9 percent by weight of core material in the polyisocyanurate portion). For polyisocyanurate the maximum design R-value per 25 mm of insulation used shall be 7.2. Facings shall be non-asphaltic, glass fiber reinforced. Insulation attachment method coordinated with standing seam metal roof system requirements for uplift resistance.

Roof insulation shall comply with building code limitations on flame spread and smoke generation as appropriate to type, location and fire rating of assembly. Provide non-combustible sheathing between flammable insulation and occupied areas where required to meet code requirements for material or performance.

#### **07413 Metal Siding**

Provide materials, equipment and systems in accordance with UFGS 07413a and as follows:

Metal siding shall be steel in minimum 26 gauge with a polyvinylidene fluoride (PVF2) factory finish. Siding shall be overlapping sheet design with exposed fasteners. Include requirements for all flashing, trim, closure strips and miscellaneous components accessory to siding system. Siding shall include a ribbed profile to minimize the visual effects of "oil canning" and similar surface distortion.

Metal siding at TEMB structures may be prefabricated insulated "sandwich" panels with exterior and interior metal siding bonded to a rigid foam filler. Foam shall use a blowing agent that minimizes outgassing.

#### **07416 Structural Standing Seam Metal Roof (SSSMRS) System**

Provide materials, equipment and systems in accordance with UFGS 07416a and as follows:

Metal roof system shall be a fully integrated design, with all components provided by a single manufacturer and installed in the same configuration as originally tested for conformance with uplift criteria. Require submittal of manufacturer's certification of conformance with specification. Roof panels shall be minimum 24 gauge, with 38 mm (1-1/2 inch) minimum height standing seam and concealed fastener clips. Finish shall be polyvinylidene fluoride (PVF2) coating in color scheduled. Include requirements for all flashing, trim, closure strips and miscellaneous components accessory to the roof system.

#### **07600 Sheet Metal Work, General**

Provide materials, equipment and systems in accordance with UFGS 07600a and as follows:

This section includes, but is not limited to: flashing not related to roof or wall systems, sheet metal expansion joints, gutters and downspouts, and miscellaneous trim. Separate flashing and sheet metal from dissimilar metals and other construction materials, which will cause galvanic corrosion to occur. Fabricate architectural sheet metal to comply with the recommendations of SMACNA's Architectural Sheet Metal Manual. Coordinate requirements for paint finished versus mill finished materials.

#### **07720 Roof Ventilators, Gravity Type**

Provide materials, equipment and systems in accordance with UFGS 07720a and as follows:

All roof ventilators to be shrouded turbine type. "Gooseneck" type units are prohibited. Ventilators shall be aluminum, finish color to match SSSMR. Indicate size and type of curb mounting required for all ventilator units. Curbs and associated flashing shall also match SSSMR finish color.

#### **07840 Firestopping**

Provide materials, equipment and systems in accordance with UFGS 07840a and as follows:

Provide clear correlation between types of firestopping and locations (penetrations, gaps, joints, etc.) where they are to be used. List alternative systems if more than one type is acceptable. Reference indications of fire rating on drawings for all walls, floors and miscellaneous assemblies as appropriate. Indicate locations where firestopping shall be finished to match adjacent construction for aesthetic reasons.

#### **07900 Joint Sealing**

Provide materials, equipment and systems in accordance with UFGS 07900a and as follows:

Sealant and related accessories shall be compatible with substrate and appropriate for each application. Caulking shall be polyurethane type. No silicone caulking to be used. Provide a table listing sealant locations generically, the acceptable products for use at that type of location and color matching requirements, if any.

### **DIVISION 8: DOORS & WINDOWS**

#### **08110 Steel Doors and Frames**

Provide materials, equipment and systems in accordance with UFGS 08110 and as follows:

Doors and frames shall be factory fabricated in accordance with SDI-100 and the additional requirements of this specification section. Door grade shall be interior doors: heavy duty (Grade II), exterior doors: extra heavy duty and galvanized (Grade III, insulated). Doors shall have no visible seams on any face, edge, top or

bottom. Both top and bottom of the door shall be closed flush. Frames shall be one standard gauge heavier than associated door. Frames in masonry walls shall be coated with bituminous mastic on interior face and fully grouted. Interior doors separating administrative areas from maintenance bays shall also be insulated.

Where labeled openings occur, coordination is required for labeled assembly (door, frame, and hardware), not merely labeled items within the assembly. Doors and frames shall bear the specific labels as required for the rated openings. Require labels to be protected so as to be clearly legible after all painting is concluded. Coordinate requirements with Section 11025.

Include specification for interior windows fabricated with steel frames with removable stops.

### **08330 Overhead Rolling Doors**

Provide materials, equipment and systems in accordance with UFGS 08330a and as follows:

Sectional Rolling Doors shall be specified for a "heavy duty" working environment. Doors shall be of the standard coiling type designed to retract into a hooded cavity mounted above the door head. Doors shall be insulated. Electric door openers shall be provided with override capabilities for manual operation. Operators shall be heavy-duty draw bar type. Doors shall be provided with a permanent label showing the manufacturers name and address and the model/serial number of the door. Doors shall be designed to withstand wind loads determined by procedures in ASCE 7. Calculations to be submitted for approval. Provide leading edge safety strips interlocked with operators. Provide glass vision lights in all doors. Weatherstripping shall be provided at all edges, including and interior baffle within the hood.

### **08331 Metal Rolling Counter Doors**

Provide materials, equipment and systems in accordance with UFGS 08331a and as follows:

Rolling counter doors shall be galvanized steel construction with baked enamel finish. Operation shall be manual push up. As a safety feature provide internal backcheck mechanism to avoid gravity free fall closing of door. At rated wall construction coordinate specification of rated door panel, hardware and means of activation. Interlock door function with fire alarm system. Door shall have key operated cylinder locks accessed only from the secured room side of the door.

### **08520 Aluminum and Environmental Control Aluminum Windows**

Provide materials, equipment and systems in accordance with UFGS 08520a and as follows:

Provide aluminum fixed and operable windows that conform to AAMA 101 HS-HC40. Minimum 10 year warranty by manufacturer. All exterior windows shall have nominal 1" insulated, low e glazing. Interior pane shall be 1/4" minimum thickness laminated glass. Window frames shall be dark bronze anodized. Coordinate security requirements with Section 11025.

### **08710 Door Hardware**

Provide materials, equipment and systems in accordance with UFGS 08710 and as follows:

Comply with all ANSI and DHI requirements for commercial grade, heavy-duty hardware and with NFPA requirements for fire and life safety. A master keyed locking system shall be provided for all doors, and shall be compatible with Best locking system to match the current Base locking system. Cylinders shall be seven-pin. Cores and keys/keyways shall be fully integrated with and provide seamless extension of the existing Base master keying system. Construction interchangeable cores shall be provided. Disassembly of knob or lockset shall not be required to remove core from lockset. All locksets, exit devices, and padlocks shall

accept same interchangeable cores. Provide permanent cores, keys, and accessories prior to final inspection.

Construction keys – four total  
Blank keys – two per core

After final acceptance and keying, the Government shall return the construction cores to the Contractor. Mounting height of hardware to be industry standard. All doors shall be operable from the room side without the use of a key, special effort, or knowledge. Hardware will meet ADAAG requirements.

### **08810 Glass and Glazing**

Provide materials, equipment and systems in accordance with UFGS 08810a and as follows:

The use of insulated laminated glass with low emissivity metallic coating is mandatory. Provide the required certification label and test reports for the units. Glazing shall meet all applicable energy conservation goals. Wire glass shall be used at fire-rated assemblies. Provide sound deadening laminated glass as required. The designer shall propose applicable STC rating.

Tempered glass, wire glass, or laminated safety glass shall be used at glazed openings that are subject to accidental human impact, and at all hazardous locations, such as sidelights adjacent to doors, glazed panels closer than 459 mm (18 inches) to the floor, and glazing in doors. Exterior glass shall be dark bronze tinted with laminated glass for the interior pane. Coordinate exterior glazing requirements with Section 11025.

### **08845 Translucent Panel Glazing (no CEGS)**

Provide materials, equipment and systems in accordance with manufacturer's standards and as follows:

Translucent panel glazing shall be glass fiber reinforced polymer sheet bonded to an aluminum grid core with perimeter channel framing. Exposed aluminum framing components shall be anodized dark bronze. Provide a single glazing panel for each building opening. Glazing shall be "crystal" color on both faces. Nominal "R" value of 4. Nominal light transmission of 30 percent. Representative products are "Kalwall" (Kalwall Corporation), "Guard-Tite" (Major Industries) and "Skywall" (Butler Manufacturing).

## **DIVISION 9: FINISHES**

### **09250 Gypsum Wallboard**

Provide materials, equipment and systems in accordance with UFGS 09250a and as follows:

Gypsum wallboard to be a minimum of 16mm (5/8-inch) in thickness. This section includes type "X" fire rated gypsum board, cement backer board, water-resistant gypsum board, stud wall framing, and suspended ceiling framing. Coordinate wall construction requirements with ratings and UL/FM assembly numbers indicated on drawings.

Specify STC ratings required in all wall interior types used. Minimum STC shall be 45.

Acoustical sealant: where sound retardant construction is indicated, use acoustical sealant and acoustical insulation as recommended by manufacturer. Provide expansion joints per manufacture and ASTM recommendations.

Finish on interior gypsum wallboard in all office and conference areas to be "Level 5" per Gypsum Association Standard GA 214. Other exposed wallboard shall be "Level 4".

### **09310 Ceramic Tile**

Provide materials, equipment and systems in accordance with UFGS 09310a and as follows:

Ceramic mosaic floor tile shall be slip resistant, abrasive or textured surface, chemical and corrosion resistant, and non-porous with low-absorption characteristics. Ceramic floor tile to be mortar bed set, thin set shall not be acceptable. Grout to be chemical-resistant epoxy. Slope all tile floors 10 mm per meter (1/8-inch per foot) to floor drains where applicable. Ceramic wall tile to be glazed tile installed over solid waterproof backing. Wall tile shall be installed to building code required wainscot height throughout toilet rooms, except at showers where tile shall be full height of wall. Provide expansion, control, contraction, and isolation joints.

### **09510 Acoustical Ceilings**

Provide materials, equipment and systems in accordance with UFGS 09510a and as follows:

Acoustical units shall be 600 mm by 600 mm or 600 mm by 1200 mm nominal size. Acoustical tile units shall have exposed tegular edges and a factory applied flat finish, including all exposed edges and bevels. Provide required seismic bracing of suspension system. Provide minimum NRC of .60.

### **09650 Resilient Flooring**

Provide materials, equipment and systems in accordance with UFGS 09650a and as follows:

Vinyl composition tile (VCT) flooring shall meet heavy-duty requirements for layer gauge, indentation, flexibility, solvent and stain resistance. Provide 100 mm high wall base of rubber or vinyl in continuous rolls at all areas with VCT. Stairs shall be covered with a slip resistant, raised pattern rubber tile. Rubber tile shall be a product system complete with cover components for treads, risers and stringers.

### **09900 Painting, General**

Provide materials, equipment and systems in accordance with UFGS 09900a and as follows:

All exposed surfaces shall be painted unless specified otherwise. Fire alarm base plates, electrical panel covers, fire alarm bells, and other items on walls, (with the exception of fire alarm pull stations) shall be painted to match adjacent wall color. Downspouts, gutters, HVAC equipment and other architectural features on or near the facility shall be made "invisible" by painting them to match the adjacent facility color. Exterior finishes shall be either an approved powder coat finish or two-part modified polyurethane finish. Provide options and systems per Fort Lewis Base Design Standards and guide requirements.

### **09915 Color Schedule**

Provide materials, equipment and systems in accordance with UFGS 09915 and as follows:

#### **Exterior Finishes**

CMU: Integral color, Light Tan.

Mortar: To match current base standard

Glass and Glazing: Tinted – dark bronze

Window Frame Color: Dark bronze, anodized aluminum finish

Exposed Metal (including roof, wall panels, metal trim, louvers, gutters, and downspouts): Light Tan.

## **Interior Finishes**

It is important that appropriate colors be selected for this type of facility; neutral or light colors shall be utilized for large background areas and wall used for display. Color-texture graphics should be used sparingly on walls. Painted CMU is not acceptable as an interior finish except where noted on the finish schedule. All interior appurtenances, except fire alarm pull boxes, shall match the wall color.

## **DIVISION 10: SPECIALTIES**

### **10100 Visual Communications Specialties**

Provide materials, equipment and systems in accordance with UFGS 10100a and as follows:

This section includes marker boards (white boards), tackboards and Projection Screens. Attach to wood blocking (treated in rated walls) for backing. Provide markerboards and tackboards in all Administrative offices. Provide markerboards, tackboards and wall mounted projection screens in Break, Training and Conference Rooms.

### **10160 Toilet Partitions**

Provide materials, equipment and systems in accordance with UFGS 10160a and as follows:

Provide to meet all ADAAG requirements for accessibility. Style E, floor to ceiling post support design. Urinal screens shall be wall-supported. Partitions will be solid HDPE core (finish 5). Fasteners shall be stainless steel and vandal-proof. Attachment brackets shall be non-ferrous metal as standard with the manufacturer. Door hardware shall be non-ferrous metal with chrome plated finish, except for the stainless steel latch bolt. Hinges shall be gravity type. Provide coat hook-door bumper, and door stop/keeper with rubber bumper.

### **10200 Exterior Louvers and Vents (non-CEGS)**

Provide materials, equipment and systems in accordance with CEGS 10200 and as follows:

Louvers shall be fabricated of 18 Ga. aluminum or 22 Ga. steel. Finish to match specifications per section 07416 Structural Standing Seam Metal Roof (SSSMR) System. Louver areas not utilized for mechanical purposes should have an insulated closure panel to provide a weather and thermal seal with a minimum u-value of .10. The edges of louver blades shall be folded or beaded for rigidity, and baffled to exclude driving rain. Louvers shall be provided with bird screens on interior face. Louvers shall bear the AMCA Certified Ratings Seal for air performance and water penetration ratings as described in AMCA 500. Coordinate installation with requirements of Section 11025.

### **10430 Exterior Signage**

Provide materials, equipment and systems in accordance with UFGS 10430a and as follows:

Provide dimensional building letters of 300mm anodized aluminum, style: Helvetica medium, color: dark bronze, dull finish. Signage shall conform to Fort Lewis Base Design Standard and Architectural Compatibility Guide. Location and message of signage shall be coordinated with the installation.

#### **10440 Interior Signage**

Provide materials, equipment and systems in accordance with UFGS 10440a and as follows:

Signage shall be simple in design and pleasing in appearance. The system shall provide a permanent room number with two changeable messages strips on room signs. Directory signage shall provide space for a schematic floor plan (with fire exit path information) and fully changeable message content. Interior signage shall be acrylic. All signage characteristics and mounting location shall be consistent with ADAAG requirements for accessibility. Signage shall be required at all rooms, areas, and spaces. Provide directory signage at both main building entrances. Surface mounted signs shall be provided with 1.6mm thick vinyl foam tape. Signage shall conform to Fort Lewis Base Design Standards and Architectural Compatibility Guide.

#### **10500 Lockers and Locker Benches (non-UFGS)**

Provide materials, equipment and systems in accordance as follows:

Lockers and benches shall be provided at locations shown on drawings. Reference locker product Lyon "Standard" single tier lockers. Lockers shall be 24-gauge steel with 16 gauge steel door and door frame. Nominal locker size shall be 380 mm W x 450 mm D x 1830 mm H. Provide louvers at top and bottom of door panel. Accessories shall include standard hat shelf, coat hooks and number plates. Tamper guard handle shall accommodate standard padlock (NIC). Lockers shall be wall anchored, have leg closure panel, sloped top and baked enamel finish.

Locker benches shall be provided at locations shown on drawings. Bench shall be laminated hardwood, minimum 200 mm wide by 30 mm thick, finished with clear acrylic. Pedestals shall be cast iron, 450 mm high, finished with baked enamel and secured to the floor with expansion anchors.

#### **10520 Fire Extinguisher Cabinets and Accessories (non-UFGS)**

Provide materials, equipment and systems in accordance as follows:

Fire extinguisher cabinets shall be fully recessed with flat trim. Fire extinguisher cabinets, all appurtenances, and accessories shall be factory painted, red color. Cabinets in rated walls shall be rated to match, or recess notch designed to maintain the wall rating. Fire extinguishers will be provided by others.

#### **10800 Toilet Accessories**

Provide materials, equipment and systems in accordance with UFGS 10800a and as follows:

Provide in toilet rooms as applicable: soap dispensers, mirrors, toilet paper dispenser, folded paper towel dispenser, grab bars, paper towel receptacle, garment hooks, and metal shelf. Provide sanitary napkin disposal in each women's water closet stall. At showers provide recessed soap dish, towel hook and shower curtain and rod. Provide semi-recessed accessories, where possible. Mirrors shall be a single panel with width to match the adjacent lavatory countertop.

Provide a mop rack and shelf in janitor closets.

## **DIVISION 11: EQUIPMENT**

### **11020 Security Vault Door**

Provide materials, equipment and systems in accordance with UFGS 11020a and as follows:

Steel security – vault type door with frame shall be of standard product from manufacturer specializing in this type of fabrication. Design of door and frame to conform to Federal Specifications FS AA-D-00600. Single leaf door shall have clear opening of 1015 mm (40 inches) wide by 1980 mm (78 inches) high. Doors to meet all requirements of Class “5” Vault Door, Style “H”.

### **11025 Forced Entry Resistant Components**

Provide materials, equipment and systems in accordance with CEGS 11025 and as follows:

Components covered in this specification are designed to resist forced entry attacks with increasing severity levels of hand, power, and thermal tools and weapons and explosives. The components include forced entry resistant personnel door/frames, louvers, and windows, glazing for doors and windows. Each type of forced entry resistant component shall be a complete assembly produced by a single manufacturer. Movable and operable components shall operate smoothly and freely. Items for exterior installation shall be designed to resist water and vapor penetrations or entrapment. Coordination with Installation Security is required for final Forced Entry Requirements.

### **11460 Unit Kitchen (non-UFGS)**

Provide materials, equipment and systems as follows:

Unit kitchen for break room shall be 2150 mm nominal total width. Include base and wall cabinetry with plastic laminate exposed surfaces. Countertop shall be post-formed plastic laminate. Include deep basin sink, refrigerator, electric cook top, exhaust hood, oven and microwave oven.

## **DIVISION 12: FURNISHINGS**

### **12320 Cabinets and Countertops**

Provide materials, equipment and systems in accordance with UFGS 12320a and as follows:

~~This section includes the counter top for the second floor customer waiting area.~~ All casework shall be factory prefinished and furnished by one manufacturer.

Provide high-pressure grade laminate at all exposed surfaces per NEMA standards. High-pressure grade laminate on horizontal work surfaces shall be laminated to particleboard substrate, 725-775 kg per cubic meter (45-50 lbs. per cubic foot), with integrally coved backsplashes and drip edge. Provide one pencil drawer built into and below the countertop. Drawer slides shall be full extension type. Attachment to walls by wood blocking.

### **12490 Window Treatment**

Provide materials, equipment and systems in accordance with UFGS 12490A and as follows:

Horizontal window blinds shall be Type II 25 mm (1-inch) aluminum slats. Coordinate color with interior finish.



### **12675 Floor Grating and Frame (Non UFGS)**

Provide materials, equipment and systems in accordance as follows:

Exterior Grating: Frame shall be fabricated of stainless steel and furnished complete with concrete anchors, corner splices, etc., as required for recessed installation. The frame shall accept the grating thickness on one side and be flush with the finished surface on the other side, and shall provide a controlled recess depth for a flush, continuous walking surface. Mat shall be fabricated of stainless steel grille. Recessed concrete pan shall slope 21 mm per meter (1/4" per foot) minimum to a drain in the concrete pan.

Interior Grating: Frame shall be fabricated of aluminum extrusion conforming to ASTM B 221, alloy 6063, temper T5. The frame shall be furnished complete with concrete anchors, corner splices, etc., as required for recessed installation. The frame shall be of the universal type to accept the grating on one side and to accept a variety of floor finishes on the other side, and to provide a controlled recess depth for a flush, continuous walking surface. Grating surface shall be carpet inserts having fusion bonded cut pile. Inserts shall be locked into treadrails shall be fabricated from 6063-T5 aluminum alloy and joined in a continuous hinge system to allow easy roll-up. Treadrail will be standard bronze anodized.

## **DIVISION 13: SPECIAL CONSTRUCTION**

### **13080 Seismic Protection For Miscellaneous Equipment**

Provide equipment and systems in accordance with UFGS 13080 and as follows:

Provide seismic bracing for suspended ceilings, electrical equipment and conduit and mechanical equipment, ductwork and piping.

### **13100 Lightning Protection System**

Provide equipment and systems in accordance with UFGS 13100A and as follows:

Provide Lightning Protection System in accordance with NFPA 780, ETL 90-6 and UL 96A.

### **13120 Standard Metal Building Systems**

Provide materials, equipment and systems in accordance with UFGS 13120a and as follows:

Edit specification for provision of structural system only. All metal building weather enclosure components (such as roofing, siding, doors and windows) shall be addressed in separate specifications. Intention is to utilize metal building industry standardization for framing purposes only.

### **13121 Metal Building Systems (Minor Requirements)**

Provide materials, equipment and systems in accordance with UFGS 13121a and as follows:

This guide specification covers the requirements for small, simple, readily available commercial products designed in accordance with MBMA "1996 Low Rise Building Systems Manual" with loads and load combinations in accordance with ASCE7.

### **13202 Fuel Storage Systems**

Provide equipment and systems in accordance with UFGS 13202a and as follows:

Provide fluid storage tanks and appurtenances for MARC and CSSC as indicated on the Waste/Supply Fluids Tank Schedule.

### **13721 Small Intrusion Detection System**

Provide equipment and systems in accordance with UFGS 13721a and as follows:

This guide specification covers the requirements for small intrusion detection systems (32 zones or less) which provide operator interaction and dynamic process manipulation, including overall system supervision, and control. The security system for this facility shall be compatible with the existing Fort Lewis Integrated Commercial Detection System (ICIDS) system. This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-345-7.

### **13851 Fire Detection And Alarm System, Addressable**

Provide a complete Fire Alarm System in accordance with UFGS-13851a and the following:

The Fire Alarm System panel and all devices shall be of the addressable type and be completely compatible with the existing base system that uses a King-Fischer -3 transmitter. The Fire Alarm System shall monitor all devices and transmit any alarms to the Base 911 center.

### **13852 Fire Alarm Reporting System, Radio Type**

Provide a complete system in accordance with UFGS 13852a and the following:

This system shall be completely compatible with the Fire Detection And Alarm System installed in the building. It shall also be compatible with the existing Radio Fire Alarm Monitoring Base Station. It shall report by VHF radio transceiver and antenna on the Base's assigned frequency.

### **13930 Wet Pipe Sprinkler System, Fire Protection**

The entire area of the MARC, CSSC, RSTA & IB buildings shall be provided with wet pipe sprinklers. Install systems in accordance with NFPA 13 and NFPA 24. All pipe, valves and fittings shall be UL labeled and FM approved. Use semi-recessed, chrome plated, glass bead type sprinklers in the administrative areas. Do not use gripper fittings in the piping system. Provide tamper switches for main sprinkler/standpipe valves and for sprinkler zone valves on each floor, as well as the Post Indicator Valve. Underground piping shall be in accordance with NFPA 24. Double check back flow preventers shall only be installed in the position certified by the manufacturer. Sprinkler systems shall be hydraulically designed.

## **DIVISION 14: CONVEYING SYSTEMS**

### **14602 Cranes, Single-Girder Bridge, Monorail And Jib**

Provide materials, equipment and systems in accordance with UFGS 14602a and as follows:

Provide bridge cranes as required for use in Vehicle Maintenance facilities. Coordinate with mechanical and electrical systems to conform with necessary clearance requirements.

## **DIVISION 15: MECHANICAL**

### **15070 Seismic Protection For Mechanical Equipment**

Provide equipment and systems in accordance with UFGS 15070A.

### **15080 Thermal Insulation for Mechanical Systems**

Provide equipment and systems in accordance with UFGS 15080A.

### **15190 Gas Piping Systems**

Provide equipment and systems in accordance with UFGS 15190a and as follows:

See 02556 Gas Distribution System.

### **15400 Plumbing, General Purpose**

Provide equipment and systems in accordance with UFGS 15400A. Plumbing vents shall not penetrate the roof. Plumbing vents shall extend through the wall (as near to the roof as possible) and terminate downwards. Vents shall be provided with 0.5 cm stainless steel wire mesh bird screen.

### **15569 Water and Steam Heating; Oil, Gas or Both; up to 20 MBTUH**

Provide equipment and systems in accordance with UFGS 15569a and as follows:

The boilers shall be self-contained scotch-marine firetube type (firebox shall not be accepted), 3-pass, packaged, complete with all accessories, mounted on a structural steel base. When the boilers operate at maximum output, the IBR Gross Output rate shall not exceed 27.3 kW per square meter (8,700 Btu/h per square foot) of fireside heating surface. Boilers shall be constructed and stamped in accordance with Section IV of the ASME Code and rated for 410 kPa (60 psi). The boiler shall be forced-draft. As a minimum, the burner controller shall provide all functions of a Honeywell 7800 Series controller with troubleshooting module. Where available for the selected boiler, provide modulating burner controls. If modulating burner controls are not available, provide hi-lo-off burner controls. Temperature gauges shall be provided in lieu of thermometers. Boilers shall be piped as indicated on the drawings.

### **15895 Air Supply, Distribution, Ventilation and Exhaust System**

Provide equipment and systems in accordance with UFGS 15895a and as follows:

Isolation valves 64mm (2 ½") and smaller shall be full port ball valves. Isolation valves 75mm (3") and larger shall be gate valves. Propylene glycol shall be used in lieu of ethylene glycol. See drawings for additional requirements.

### **15910 Direct Digital Control Systems**

See Technical Specification 15910 provided.

### **15940 Overhead Vehicle Tailpipe [And Welding Fume] Exhaust Removal System(s)**

Provide equipment and systems in accordance with UFGS 15895a and as follows:

Motors shall have explosion proof enclosures. Motor starters shall be magnetic across-the-line with general-purpose enclosure. Motors, exhaust fans, dampers and louvers shall be configured as indicated.

Ducts shall be constructed of galvanized sheets of the minimum gauge thickness for ducts as required in SMACNA-08 and SMACNA-09.

Tailpipe adapters shall fit 50mm to 100mm nominal diameter exhaust pipe.

Flexible exhaust tubing shall be approved heat-resistant wire-reinforced glass fiber and neoprene tubing or approved heat-resistant wire-reinforced glass fiber and silicone tubing.

Exhaust hose shall be 150 mm nominal diameter. The exhaust hose shall utilize a spring operated retracting hose reel. The reel shall provide a minimum of 10.5 meters of hose retraction when utilizing the 150 mm nominal diameter hose. Exhaust fan and motor shall be separately mounted as indicated on the drawings and exhaust through the building wall translucent panels. Each exhaust hose and tailpipe adapter shall be provided with a separate reel, fan and motor.

Contractor shall size the fan, motor, damper and ductwork to provide 285 L/s flow for the calculated pressure drop through the entire system. After installation, the Contractor shall test the assembly with the greatest pressure drop to demonstrate 285 L/s exhaust flow has been achieved.

#### **15951 Direct Digital Control for HVAC**

Provide equipment and systems in accordance with UFGS 15951a and as follows:

Sequences of Operation have been provided in the drawings for several of the HVAC systems. Temperature sensors shall be Johnson Controls Ultra Precision 0.1% TE-6000-101 series, or approved equal. Carbon monoxide and carbon dioxide sensors shall provide real-time monitoring of the contaminant levels. CO sensors shall be accurate to within 1.0 ppm and the CO2 sensors shall be accurate to 50.0 ppm concentration.

#### **15990 Testing, Adjusting and Balancing of HVAC Systems**

Provide equipment and systems in accordance with UFGS 15990A.

#### **15995 Commissioning of HVAC Systems**

Provide services in accordance with UFGS 15990a and as follows:

Commissioning of systems and equipment shall take place only after TAB work is complete. An independent qualified firm or agency specializing in such work shall complete commissioning work. The independent firm or agency shall furnish a written report on the commissioning work. Commissioning work shall be coordinated with DDC system commissioning and training for the DDC system's operating personnel. All commissioning shall be performed in accordance with UFGS 15995a except for the following:

- a) In paragraph 3.1 "Commissioning Team and Checklists" the second sentence shall be changed to read: "In addition, the Government will be represented by a representative of the Contracting Officer, and the using Agency."
- b) In paragraph 3.1 "Commissioning Team and Checklists" the Designation "D" shall be changed to "Contractor's Mechanical Designer."

All functions of the details sequences of operations shall be tested.

**Division 16: ELECTRICAL**

**16070 Seismic Protection For Electrical Equipment**

Provide all necessary requirements in accordance with the UFGS-16070A.

**16370 Electrical Distribution System, Aerial**

Provide overhead to underground transition in accordance with UFGS-16370A.

**16375 Electrical Distribution System, Underground**

Provide equipment and a complete system in accordance with UFGS-16375a and the following:

Medium voltage cables shall be soft drawn copper, rated for 15 kV circuit voltage.

Medium voltage cable terminations shall be 15 kV between phases for 133 percent insulation level.

Power transformers shall be pad-mounted, oil-filled, loop-feed, outdoor type ~~with copper windings~~ in accordance with the requirements of ANSI C57.12.26.

**16415 Electrical Work, Interior**

Provide complete electrical system including power, lighting, control and distribution.

**16528 Exterior Lighting Including Security and CCTV Applications**

Provide electrical equipment and systems for parking and walkway lighting in accordance with UFGS-16528a and the following:

All exterior electrical shall be routed underground.

The parking lot light poles and luminaires shall be installed to match existing installations on base.

**16710 Premises Distribution**

Interior distribution system for telecommunications system shall be in accordance with UFGS 16710a and the details in this RFP.

**16711 Telephone System, Outside Plant**

Exterior distribution system for telecommunications system shall be in accordance with UFGS 16711a and the details in this RFP.

**16770 Radio and Public Address Systems**

Provide a public address system in accordance with UFGS 16770A.

END OF SECTION

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GENERAL DECISION **WA020001** 03/29/2002 WA1

Date: March 29, 2002

General Decision Number **WA020001**

Superseded General Decision No. WA010001

State: Washington

Construction Type:

DREDGING

HEAVY

HIGHWAY

County(ies):

STATEWIDE

HEAVY AND HIGHWAY AND DREDGING CONSTRUCTION PROJECTS

(Excludes D.O.E. Hanford Site in Benton and Franklin Counties)

Modification Number	Publication Date
0	03/01/2002
1	03/08/2002
2	03/15/2002
3	03/29/2002

COUNTY(ies):

STATEWIDE

CARP0001W 06/01/2001

	Rates	Fringes
COLUMBIA RIVER AREA - ADAMS, BENTON, COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GRANT, OKANOGAN (EAST OF THE 120TH MERIDIAN) AND WALLA WALLA COUNTIES		

CARPENTERS:

GROUP 1:	23.18	6.00
GROUP 2:	24.29	6.00
GROUP 3:	23.45	6.00
GROUP 4:	23.18	6.00
GROUP 5:	57.45	6.00
GROUP 6:	25.56	6.00

SPOKANE AREA: ASOTIN, GARFIELD, LINCOLN, PEND OREILLE, SPOKANE, STEVENS AND WHITMAN COUNTIES

CARPENTERS:

GROUP 1:	22.51	6.00
GROUP 2:	23.61	6.00
GROUP 3:	22.77	6.00
GROUP 4:	22.51	6.00
GROUP 5:	55.78	6.00
GROUP 6:	24.82	6.00

## CARPENTERS CLASSIFICATIONS

GROUP 1: Carpenter; Burner-Welder; Rigger and Signaler; Insulators (all types), Acoustical, Drywall and Metal Studs, Metal Panels and Partitions; Floor Layer, Sander, Finisher and Astro Turf; Layout Carpenters; Form Builder; Rough Framers; Outside or Inside Finisher, including doors, windows, and jams; Sawfiler; Shingler (wood, composition) Solar, Fiberglass, Aluminum or Metal; Scaffold Erecting and Dismantling; Stationary Saw-Off Bearer; Wire, Wood and Metal Lather Applicator

GROUP 2: Millwright, machine erector

GROUP 3: Piledriver - includes driving, pulling, cutting, placing collars, setting, welding, or creosote treated material, on all piling

GROUP 4: Bridge, dock and wharf carpenters

GROUP 5: Divers

GROUP 6: Divers Tender

### DEPTH PAYY FOR DIVERS:

Each foot over 50-100 feet	\$1.00
Each foot over 100-175 feet	2.25
Each foot over 175-250 feet	5.50

## HAZMAT PROJECTS

Anyone working on a HAZMAT job (task), where HAZMAT certification is required, shall be compensated at a premium, in addition to the classification working in as follows:

LEVEL D + \$.25 per hour - This is the lowest level of protection. No respirator is used and skin protection is minimal.

LEVEL C + \$.50 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B + \$.75 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit".

LEVEL A +\$1.00 per hour - This level utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line.

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CARP00030 12/01/2001

	Rates	Fringes
SOUTHWEST WASHINGTON: CLARK, COWLITZ, KLUCKITAT, LEWIS(Piledriver only), PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to Willapa Bay to the Pacific Ocean), SKAMANIA AND WAHIAKUM COUNTIES and INCLUDES THE ENTIRE PENINSULA WEST OF WILLAPA BAY		

SEE ZONE DESCRIPTION FOR CITIES BASE POINTS

### ZONE 1:

CARPENTERS; ACOUSTICAL	26.83	8.29
DRYWALL	26.83	8.29



FLOOR LAYERS & FLOOR FINISHERS

(the laying of all hardwood floors  
nailed and mastic set, parquet and  
wood-type tiles, and block floors,  
the sanding and finishing of floors,  
the preparation of old and new  
floors when the materials mentioned  
above are to be installed); INSULATORS  
(fiberglass and similar irritating

materials	26.98	8.29
MILLWRIGHTS	27.33	8.29
PILEDIVERS	27.33	8.29
DIVERS	63.75	8.29
DIVERS TENDERS	29.33	8.29

DEPTH PAY

50 TO 100 FEET	\$1.00 PER FOOT OVER 50 FEET
100 TO 150 FEET	1.50 PER FOOT OVER 100 FEET
150 TO 200 FEET	2.00 PER FOOT OVER 150 FEET

Zone Differential (Add up Zone 1 rates):

Zone 2 - \$0.85  
Zone 3 - 1.25

Zone 4 - 1.70  
Zone 5 - 2.00  
Zone 6 - 3.00

BASEPOINTS: ASTORIA, LONGVIEW, PORTLAND, THE DALLES,  
AND VANCOUVER, (NOTE: All dispatches for Washington State  
Counties: Cowlitz, Wahkiakum and Pacific shall be from Longview  
Local #1707 and mileage shall be computed from that point.)

ZONE 1: Projects located within 30 miles of the respective  
city hall of the above mentioned cities  
ZONE 2: Projects located more than 30 miles and less than 40  
miles of the respective city of the above mentioned  
cities  
ZONE 3: Projects located more than 40 miles and less than 50  
miles of the respective city of the above mentioned  
cities  
ZONE 4: Projects located more than 50 miles and less than 60  
miles of the respective city of the above mentioned  
cities.  
ZONE 5: Projects located more than 60 miles and less than 70  
miles of the respective city of the above mentioned  
cities  
ZONE 6: Projects located more than 70 miles of the respected  
city of the above mentioned cities

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CARP0770D 12/01/2001

	Rates	Fringes
WESTERN WASHINGTON: CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS (excludes piledivers only), MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean),		

PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM  
COUNTIES

CARPENTERS AND DRYWALL APPLICATORS	27.54	7.61
CARPENTERS ON CREOSOTE MATERIAL	27.82	7.61
SAWFILERS, STATIONARY POWER SAW OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLER, FLOOR SANDER OPERATOR AND OPERATORS OF OTHER STATIONARY WOOD WORKING TOOLS	27.67	7.61
MILLWRIGHT AND MACHINE ERECTORS	28.54	7.61
ACOUSTICAL WOKRERS	27.70	7.61
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED MATERIAL, ALL PILING	27.74	7.61
PILEDRIIVER, BRIDGE, DOCK & WHARF CARPENTERS	27.54	7.61
DIVERS	67.96	7.61
DIVERS TENDER	30.24	7.61

(HOURLY ZONE PAY APPLICABLE TO ALL CLASSIFICATIONS EXCEPT  
MILLWRIGHT AND PILEDRIIVER)

Hourly Zone Pay shall be paid on jobs located outside  
of the free zone computed from the city center of the  
following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay	
0 -25 radius miles	Free
25-35 radius miles	\$1.00/hour
35-45 radius miles	\$1.15/hour
45-55 radius miles	\$1.35/hour
Over 55 radius miles	\$1.55/hour

(HOURLY ZONE PAY - MILLWRIGHT AND PILEDRIIVER ONLY)

Hourly Zone Pay shall be computed from Seattle Union  
Hall, Tacoma City center, and Everett City center

Zone Pay	
0 -25 radius miles	Free
25-45 radius miles	\$ .70/hour
Over 45 radius miles	\$1.50/hour

CENTRAL WASHINGTON: CHELAN, DOUGLAS (WEST OF THE 120TH MERIDIAN),  
KITITITAS, OKANOGAN (WEST OF THE 120TH MERIDIAN) AND YAKIMA  
COUNTIES

CARPENTERS AND DRYWALL APPLICATORS	20.72	7.47
CARPENTERS ON CREOSOTED MATERIAL	20.82	7.47
SAWFILERS, STATIONARY POWER S37 OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLERS, FLOOR SANDER OPERATORS	20.85	7.47
MILLWRIGHT AND MACHINE ERECTORS	28.22	7.47
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED MATERIAL, ALL PILING	27.42	7.47
PILEDRIIVER, BRIDGE DOCK AND WHARF CARPENTERS	27.22	7.47
DIVERS	65.81	6.62
DIVERS TENDER	29.28	6.62

(HOURLY ZONE PAY APPLICABLE TO ALL CLASSIFICATIONS EXCEPT  
MILLWRIGHT AND PILEDRIIVER)

Hourly Zone Pay shall be paid on jobs located outside  
of the free zone computed from the city center of the

following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay	
0 -25 radius miles	Free
25-35 radius miles	\$1.00/hour
35-45 radius miles	\$1.15/hour
45-55 radius miles	\$1.35/hour
Over 55 radius miles	\$1.55/hour

(HOURLY ZONE PAY - MILLWRIGHT AND PILEDRIIVER ONLY)

Hourly Zone Pay shall be computed from Seattle Union  
Hall, Tacoma City center, and Everett City center

Zone Pay	
0 -25 radius miles	Free
25-45 radius miles	\$ .70/hour
Over 45 radius miles	\$1.50/hour

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ELEC0046A 06/04/2001

	Rates	Fringes
CALLAM, JEFFERSON, KING AND KITSAP COUNTIES		
ELECTRICIANS	31.50	3%+8.88
CABLE SPLICERS	34.65	3%+8.88

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ELEC0048C	01/01/2002		
		Rates	Fringes
CLARK, KLICKITAT AND SKAMANIA COUNTIES			
ELECTRICIANS		30.20	3%+11.00
CABLE SPLICERS		30.45	3%+11.00

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ELEC0073A	01/01/2002		
		Rates	Fringes
ADAMS, FERRY, LINCOLN, PEND OREILLE, SPOKANE, STEVENS, WHITMAN COUNTIES			
ELECTRICIANS		23.82	3%+9.58
CABLE SPLICERS		24.22	3%+9.58

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ELEC0076B	07/01/2001		
		Rates	Fringes
GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE, AND THURSTON COUNTIES			
ELECTRICIANS		28.29	3%+10.32
CABLE SPLICERS		31.12	3%+10.32

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ELEC0077C	02/01/2002		
		Rates	Fringes
LINE CONSTRUCTION:			
CABLE SPLICERS		35.44	3.875%+7.20
LINEMEN, POLE SPRAYERS,			
HEAVY LINE EQUIPMENT MAN		31.96	3.875%+7.20
LINE EQUIPMENT MEN		27.91	3.875%+5.45
POWDERMEN, JACKHAMMERMEN		24.72	3.875%+5.45
GROUNDMEN		23.27	3.875%+5.45
TREE TRIMMER		22.46	3.875%+5.45

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ELEC0112E	12/01/2000		
		Rates	Fringes
ASOTIN, BENTON, COLUMBIA, FRANKLIN, GARFIELD, KITTITAS, WALLA WALLA, YAKIMA COUNTIES			
ELECTRICIANS		27.75	3%+6.93
CABLE SPLICERS		29.14	3%+6.93

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ELEC0191C	08/31/2001		
		Rates	Fringes
ISLAND, SAN JUAN, SNOHOMISH, SKAGIT AND WHATCOM COUNTIES			
ELECTRICIANS		29.66	3%+8.33
CABLE SPLICERS		33.23	3%+8.33

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ELEC0191D 08/31/2001

	Rates	Fringes
CHELAN, DOUGLAS, GRANT AND OKANOGAN COUNTIES		

ELECTRICIANS	26.66	3%+8.03
CABLE SPLICERS	29.33	3%+8.03

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ELEC0970A 01/01/2002

	Rates	Fringes
COWLITZ AND WAHAKIAKUM COUNTIES		

ELECTRICIANS	27.55	3%+8.75
CABLE SPLICERS	30.31	3%+8.75

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ENGI0302E 06/01/2001

	Rates	Fringes
CHELAN (WEST OF THE 120TH MERIDIAN), CLALLAM, DOUGLAS (WEST OF THE 120TH MERIDIAN), GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, KITTITAS, MASON, OKANOGAN (WEST OF THE 120TH MERIDIAN), SAN JUAN, SKAGIT, SNOHOMISH, WHATCOM AND YAKIMA (WEST OF THE 120TH MERIDIAN) COUNTIES		

#### PROJECTS

CATEGORY A PROJECTS (excludes Category B projects, as show below)

##### POWER EQUIPMENT OPERATORS:

Zone 1 (0-25 radius miles):

GROUP 1AAA	29.61	8.38
GROUP 1AA	29.11	8.38
GROUP 1A	28.61	8.38
GROUP 1	28.11	8.38
GROUP 2	27.67	8.38
GROUP 3	27.31	8.38
GROUP 4	25.21	8.38

Zone 2 (26-45 radius miles) - Add \$ .70 to Zone 1 rates

Zone 3 (Over 45 radius miles) - Add \$1.00 to Zone 1 rates

BASEPOINTS: Bellingham, Mount Vernon, Kent, Port Angeles, Port Townsend, Aberdeen, Shelton, Bremerton, Wenatchee, Yakima, Seattle, Everett

#### POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-over 300 tons or 300 ft. of boom (including job with attachments)

GROUP 1AA - Cranes - 200 tons to 300 tons or 250 ft. of boom (including jib and attachments); Tower crane over 175 ft. in height, base to boom

GROUP 1A - Cranes - 100 tons thru 199 tons or 150' of boom (including jib with attachments); Crane-overhead, bridge type,

100 tons and over; Tower crane up to 175 ft. in height base to boom; Loader-overhead, 8 yards and over; Shovel, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes-45 tons thru 99 tons, under 150 ft. of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Shovel, excavator, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader-overhead, 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, d-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled-45 yards and over; Slipform pavers; Transporters, all track or truck type

GROUP 2 - Barrier machine (zipper); Barch Plant opeator-concrete; Bump cutter; Cranes-20 tons thru 44 tons with attachments; Cranes-overheads, bridge type-20 tons through 44 tons; Chipper; Concrete pump-truck mount with boom attachment; Crusher; Deck Engineer/Deck Winches (power); Drilling machine;

Excavator, shovel backhoe-3 yards and under; Finishing machine Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders, overhead under 6 yds.; Loaders-plant feed; Locomotives-all; Mechanics-all; Mixers-asphalt plant; Motor patrol graders-finishing; Pildriver (other than crane mount); Roto-mill, roto-grinder; Screedman, Spreader, Topside Operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self-propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrader trimmer; Tractors, backhoes-over 75 hp; Transfer material service machine-shuttle buggy, blow knox, roadtec; Truck crane oiler/driver-100 tons and over; Truck mount portable conveyor;Yo Yo Pay Dozer

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments; Cranes-A-frame over 10 tons; Drill oilers-auger type, truck or crane mount; Dozers D9 and under; Forklifts-3000 lbs and over with attachments; horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strao tower bucket elevators; Hydralifts/boom truck-over 10 tons; Loader-elevating type belt; Motor Patrol Grader-non-finishing; Plant Oiler-asphalt, crusher; Pumps-concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrapers-concrete and carryall; Service engineers-equipment; Trenching machines; Truck crane oiler/driver-under 100 tons Tractors, backhoes-under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Cranes-A-frame-10 tons and under; Elevator and manlift-permanent and shaft type; Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts, boom trucks-10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Post Hole Digger-mechanical; Power Plant; Pumps-water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shot crete/gunite equipment operator

CATEGORY B PROJECTS - 95% of the basic hourly rate for each group plus full fringe benefits applicable to Category A projects shall apply to the following projects. Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and structures whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

WORK PERFORMED ON HYDRAULIC DREDGES:

Total Project Cost \$300,000 and over

GROUP 1	26.85	8.38
GROUP 2	26.95	8.38
GROUP 3	27.29	8.38
GROUP 4	27.34	8.38
GROUP 5	28.73	8.38
GROUP 6	26.85	8.38

GROUP 1: Assistant Mate (Deckhand)  
 GROUP 2: Oiler  
 GROUP 3: Assistant Engineer (Electric, Diesel, Steam or Booster Pump); Mates and Boatmen  
 GROUP 4: Craneman, Engineer Welder  
 GROUP 5: Leverman, Hydraulic  
 GROUP 6: Maintenance

Total Project cost under \$300,000

GROUP 1	25.51	8.38
GROUP 2	25.60	8.38
GROUP 3	25.93	8.38
GROUP 4	25.97	8.38
GROUP 5	27.29	8.38
GROUP 6	25.51	8.38

GROUP 1: Assistant Mate (Deckhand)  
 GROUP 2: Oiler  
 GROUP 3: Assistant Engineer (Electric, Diesel, Steam, or Booster Pump); Mates and Boatmen  
 GROUP 4: Craneman, Engineer Welder  
 GROUP 5: Leverman, Hydraulic  
 GROUP 6: Maintenance

HEAVY WAGE RATES (CATEGORY A) APPLIES TO CLAM SHELL DREDGE, HOE AND DIPPER, SHOVELS AND SHOVEL ATTACHMENTS, CRANES AND BULLDOZERS.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not  
 outfitted with protective clothing  
 H-2 Class "C" Suit - Base wage rate plus \$.25 per hour.  
 H-3 Class "B" Suit - Base wage rate plus \$.50 per hour.  
 H-4 Class "A" Suit - Base wage rate plus \$.75 per hour.

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 ENGI0370C 06/01/2001

	Rates	Fringes
ADAMS, ASOTIN, BENTON, CHELAN (EAST OF THE 120TH MERIDIAN), COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN (EAST OF THE 120TH MERIDIAN), PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN AND YAKIMA (EAST OF THE 120TH MERIDIAN) COUNTIES		

ZONE 1:

POWER EQUIPMENT OPERATORS:

GROUP 1A	20.94	6.02
GROUP 1	21.49	6.02
GROUP 2	21.81	6.02
GROUP 3	22.42	6.02
GROUP 4	22.58	6.02
GROUP 5	22.74	6.02
GROUP 6	23.02	6.02
GROUP 7	23.29	6.02
GROUP 8	24.39	6.02

ZONE DIFFERENTIAL (Add to Zone 1  
 rate): Zone 2 - \$2.00

Zone 1: Within 45 mile radius of Spokane, Moses Lake, Pasco,  
 Washington; Lewiston, Idaho

Zone 2: Outside 45 mile radius of Spokane, Moses Lake, Pasco,  
 Washington; Lewiston, Idaho

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1A: Boat Operator; Crush Feeder; Oiler; Steam Cleaner

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors  
 (under 2000 CFM, gas, diesel, or electric power); Deck Hand;  
 Drillers Helper (Assist driller in making drill rod connections,  
 service drill engine and air compressor, repair drill rig and  
 drill tools, drive drill support truck to and on the job site,  
 remove drill cuttings from around bore hole and inspect drill rig  
 while in operation); Fireman & Heater Tender; Grade Checker;  
 Hydro-seeder, Mulcher, Nozzleman; Oiler Driver, & Cable Tender,  
 Mucking Machine; Pumpman; Rollers, all types on subgrade,  
 including seal and chip coatings (farm type, Case, John Deere &  
 similar, or Compacting Vibrator), except when pulled by Dozer  
 with operable blade; Welding Machine

GROUP 2: A-frame Truck (single drum); Assistant Refrigeration  
 Plant (under 1000 ton); Assistant Plant Operator, Fireman or  
 Pugmixer (asphalt); Bagley or Stationary Scraper; Belt Finishing



Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator Hoisting Materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, hydra-lift & similar; Gin Trucks (pipeline); Hoist, single drum; Loaders (bucket elevators and conveyors); Longitudinal Float; Mixer (portable-concrete); Pavement Breaker, Hydra-Hammer & similar; Power Broom; Railroad Ballast Regulation Operator (self-propelled); Railroad Power Tamper Operator (self-propelled); Railroad Tamper Jack Operator (self-propelled); Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross & similar on construction job only); Tractor (Farm type R/T with attachment, except Backhoe); Tugger Operator

GROUP 3: A-frame Truck (2 or more drums); Assistant Refrigeration Plant & Chiller Operator (over 1000 ton); Backfillers (Cleveland & similar); Batch Plant & Wet Mix Operator, single unit (concrete); Belt-Crete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bending

Machine; Bob Cat; Boring Machine (earth); Boring Machine (rock under 8" bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete); Chipper (without crane); Cleaning & Doping Machine (pipeline); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green & similar); Elevating Grader-type Loader (Dumora, Adams or similar); Generator Plant Engineers (diesel or electric); Gunnite Combination Mixer & Compressor; Locomotive Engineer; Mixermobile; Mucking Machine; Posthole Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Tractor (to D-6 or equivalent) and Traxcavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman & similar); Curb Extruder (asphalt or concrete); Drills (churn, core, calyx or diamond) (operate drilling machine, drive or transport drill rig to and on job site and weld well casing); Equipment Serviceman; Greaser & Oiler; Hoist (2 or more drums or Tower Hoist); Loaders (overhead & front-end, under 4 yds. R/T); Refrigeration Plant Engineer (under 1000 ton); Rubber-tired Skidders (R/T with or without attachments); Surface Heater & Plant Machine; Trenching Machines (under 7 ft. depth capacity); Turnhead (with re-screening); Vacuum Drill (reverse circulation drill under 8" bit)

GROUP 5: Backhoe (under 45,000 gw); Backhoe & Hoe Ram (under 3/4 yd.); Carrydeck & Boom Truck (under 25 tons); Cranes (25 tons & under), all attachments including clamshell, dragline; Derricks & Stifflegs (under 65 tons); Drilling Equipment (8" bit & over) (Robbins, reverse circulation & similar) (operates drilling machine, drive or transport drill rig to and on job site and weld well casing); Hoe Ram; Piledriving Engineers; Paving (dual drum); Railroad Track Liner Operator (self-propelled); Refrigeration Plant Engineer (1000 tons & over); Signalman (Whirleys, Highline Hammerheads or similar)

GROUP 6: Asphalt Plant Operator; Automatic Subgrader (Ditches & Trimmers) (Autograde, ABC, R.A. Hansen & similar on grade wire); Backhoe (45,000 gw and over to 110,000 gw); Backhoes & Hoe Ram (3/4 yd. to 3 yd.); Batch Plant (over 4 units); Batch & Wet Mix Operator (multiple units, 2 & incl. 4); Blade Operator (motor patrol & attachments, Athey & Huber); Boom Cats (side); Cable Controller (dispatcher); Clamshell Operator (under 3 yds.); Compactor (self-propelled with blade); Concrete Pump Boom Truck; Concrete Slip Form Paver; Cranes (over 25 tons, to and including 45 tons), all attachments including clamshell, dragline; Crusher, Grizzle & Screening Plant Operator; Dozer, 834 R/T & similar; Draglines (under 3 yds.); Drill Doctor; H.D. Mechanic; H.D. Welder; Loader Operator (front-end & overhead, 4 yds. incl. 8 yds.); Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Quad-Track or similar equipment; Rollerman (finishing asphalt pavement); Roto Mill (pavement grinder); Scrapers, all, rubber-tired; Screed Operator; Shovel (under 3 yds.); Tractors (D-6 & equivalent & over); Trenching Machines (7 ft. depth & over); Tug Boat Operator Vactor guzzler, super sucker

GROUP 7: Backhoe (over 110,000 gw); Backhoes & Hoe Ram (3 yds & over); Blade (finish & bluetop) Automatic, CMI, ABC, Finish Athey & Huber & similar when used as automatic; Cableway Operators; Concrete Cleaning/Decontamination machine operator; Cranes (over 45 tons to but not including 85 tons), all attachments including clamshell and dragline; Derricks & Stiffleys (65 tons & over); Elevating Belt (Holland type); Heavy equipment robotics operator; Loader (360 degrees revolving Koehring Scooper or similar); Loaders (overhead & front-end, over 8 yds. to 10 yds.); Rubber-tired Scrapers (multiple engine with three or more scrapers); Shovels (3 yds. & over); Whirleys & Hammerheads, ALL

GROUP 8: Cranes (85 tons and over, and all climbing, overhead, rail and tower), all attachments including clamshell, dragline; Loaders (overhead and front-end, 10 yards and over); Helicopter Pilot

BOOM PAY: (All Cranes, Including Tower)

180' to 250'      \$ .30 over scale

Over 250'          \$ .60 over scale

NOTE: In computing the length of the boom on Tower Cranes, they shall be measured from the base of the Tower to the point of the boom.

HAZMAT: Anyone working on HAZMAT jobs, working with supplied air shall receive \$1.00 an hour above classification.

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ENGI0370G 06/01/2000

	Rates	Fringes
ADAMS, ASOTIN, BENTON, CHELAN (EAST OF THE 120TH MERIDIAN),		
COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN,		
GARFIELD, GRANT, LINCOLN, OKANOGAN (EAST OF THE 120TH MERIDIAN),		
PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN AND YAKIMA		

(EAST OF THE 120TH MERIDIAN) COUNTIES

WORK PERFORMED ON HYDRAULIC DREDGES

GROUP 1:	24.23	5.77
GROUP 2:	24.60	5.77
GROUP 3:	24.63	5.77
GROUP 4:	25.02	5.77
GROUP 5:	24.13	5.77

GROUP 1: Assistant Mate (Deckhand) and Oiler  
GROUP 2: Assistant Engineer (Electric, Diesel, Steam, or  
Booster Pump); Mates and Boatmen  
GROUP 3: Engineer Welder  
GROUP 4: Leverman, Hydraulic  
GROUP 5: Maintenance

HEAVY WAGE RATES APPLIES TO CLAM SHELL DREDGE, HOE AND DIPPER,  
SHOVELS AND SHOVEL ATTACHMENTS, CRANES AND BULLDOZERS.

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ENGI0612A 06/01/2001

	Rates	Fringes
LEWIS, PIERCE, PACIFIC (THAT PORTION WHICH LIES NORTH OF A PARALLEL LINE EXTENDED WEST FROM THE NORTHERN BOUNDARY OF WAHKAUKUM COUNTY TO THE SEA IN THE STATE OF WASHINGTON) AND THURSTON COUNTIES		

PROJECTS:

CATEGORY A PROJECTS (excludes Category B projects, as shown  
below)

POWER EQUIPMENT OPERATORS:

ZONE 1 (0-25 radius miles):

GROUP 1AAA	29.61	8.38
GROUP 1AA	29.11	8.38
GROUP 1A	28.61	8.38
GROUP 1	28.11	8.38
GROUP 2	27.67	8.38
GROUP 3	27.31	8.38
GROUP 4	25.21	8.38

ZONE 2 (26-45 radius miles) - Add \$.70 to Zone 1 rates

ZONE 3 (Over 45 radius miles) - Add \$1.00 to Zone 1 rates

BASEPOINTS: Tacoma, Olympia, and Centralia

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-300 tons, or 300 ft of boom (including jib  
with attachments)

GROUP 1AA - Cranes 200 tons to 300 tons, or 250 ft of boom  
(including jib with attachments); Tower crane over 175 ft in  
height, base to boom

GROUP 1A - Crane 100 tons thru 199 tons, or 150 of boom

(including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Shovel, excavator, backhoes-6 yds and over with attachments

GROUP 1 - Cableways; Cranes-45 tons thru 99 tons, under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type - 45 tons thru 99 tons; Excavator, shovel, backhoes over 3 yards and under 6 yards; hard tail end dump articulating off-road equipment 45 yards and over; loader-overhead 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled-45 yds and over; Slipform pavers; Transporters-all track or truck type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-concrete; Bump cutter; Cranes-20 tons through 44 tons with attachments; Crane-overhead, bridge type-20 tons thru 44 tons; Chipper, Concrete Pump-truck mounted with boom attachment; Crushers; Deck Engineer/Deck Winches (power); Drilling machine;

Excavator, shovel, backhoe-3yards and under; Finishing machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders, overhead under 6 yds.; Loaders, plant feed; Locomotive-all; Mechanics-all; Mixers, asphalt plant; Motor patrol graders-finishing; Piledriver (other than crane mount); Roto-mill, roto grinder; screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self propelled, hard tail end dump, articulating off-road equipment under 45 yds.; Subgrader trimmer; Tractors, backhoes over 75 hp.; Transfer material service machine-shuttle buggy, Blaw Knox-Roadtec; Truck Crane Oiler/driver-100 tons and over, Truck Mount Portable Conveyor; Yo Yo Pay dozer.

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments; Cranes-A-frame over 10 tons; Drill Oilers-Auger type, truck or crane mount; Dozers-D-9 and under; Forklifts-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/Boom Trucks-over 10 tons; Loaders-elevating type, belt; Motor patrol grader-nonfinishing; Plant Oiler-Asphalt, Crusher; Pumps, Concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrapers-Concrete and Carry all; Trenching machines; Truck Crane Oiler/Driver-under 100 tons; Tractor, backhoe-under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Crane-A-Frame, 10 tons and under; Elevator and manlift-permanent and shaft type; Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts, boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole Digger-mechanical; Power plant; Pumps-Water; Roller-other than Plant Mix; Wheel Tractors, Farmall type; Shotcrete/Gunite Equipment Operator

CATEGORY B PROJECTS - 95% of the basic hourly rate for each group plus full fringe benefits applicable to Category A projects shall apply to the following projects: Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and structures whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000

WORK PERFORMED ON HYDRAULIC DREDGES:

Total Project cost \$300,000 and over

GROUP 1	26.85	8.38
GROUP 2	26.95	8.38
GROUP 3	27.29	8.38
GROUP 4	27.34	8.38
GROUP 5	28.73	8.38
GROUP 6	26.85	8.38

GROUP 1: Assistant Mate (Deckhand)  
 GROUP 2: Oiler  
 GROUP 3: Assistant Engineer (Electric, Diesel, Steam or Booster Pump); Mates and Boatmen  
 GROUP 4: Craneman, Engineer Welder  
 GROUP 5: Leverman, Hydraulic  
 GROUP 6: Maintenance

Total Project Cost under \$300,000

GROUP 1	25.51	8.38
GROUP 2	25.60	8.38
GROUP 3	25.93	8.38
GROUP 4	25.97	8.38
GROUP 5	27.29	8.38
GROUP 6	25.51	8.38

GROUP 1: Assistant Mate (Deckhand)  
 GROUP 2: Oiler  
 GROUP 3: Assistant Engineer (Electric, Diesel, Steam or Booster Pump); Mates and Boatmen  
 GROUP 4: Craneman, Engineer Welder  
 GROUP 5: Leverman, Hydraulic  
 GROUP 6: Maintenance

HEAVY WAGE RATES APPLIES TO CLAM SHEEL DREDGE, HOE AND DIPPER, SHOVELS AND SHOVEL ATTACHMENTS, CRANES AND BULLDOZERS

HANDLING OF HAZARDOUS WASTE MATERIALS

H-1 - When not outfitted with protective clothing of level D equipment - Base wage rate  
 H-2 - Class "C" Suit - Base wage rate + \$.25 per hour  
 H-3 - Class "B" Suit - Base wage rate + \$.50 per hour  
 H-4 - Class "A" Suit - Base wage rate + \$.75 per hour

\* ENGI0701D 01/01/2002

CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH), SKAMANIA, AND  
WAHIAKUM COUNTIES

POWER EQUIPMENT OPERATORS (See Footnote A)

ZONE 1:

	Rates	Fringes
GROUP 1	28.55	8.95
GROUP 1A	29.98	8.95
GROUP 1B	31.41	8.95
GROUP 2	27.34	8.95
GROUP 3	26.60	8.95
GROUP 4	26.09	8.95
GROUP 5	25.50	8.95
GROUP 6	23.20	8.95

Zone Differential (add to Zone 1 rates):

Zone 2 - \$1.50

Zone 3 - 3.00

For the following metropolitan counties: MULTNOMAH; CLACKAMAS;  
MARION; WASHINGTON; YAMHILL; AND COLUMBIA; CLARK; AND COWLITZ  
COUNTY, WASHINGTON WITH MODIFICATIONS AS INDICATED:

All jobs or projects located in Multnomah, Clackamas and Marion  
Counties, West of the western boundary of Mt. Hood National  
Forest and West of Mile Post 30 on Interstate 84 and West of Mile  
Post 30 on State Highway 26 and West of Mile Post 30 on Highway  
22 and all jobs or projects located in Yamhill County, Washington  
County and Columbia County and all jobs or projects located in  
Clark & Cowlitz County, Washington except that portion of Cowlitz  
County in the Mt. St. Helens "Blast Zone" shall receive Zone I  
pay for all classifications.

All jobs or projects located in the area outside the identified  
boundary above, but less than 50 miles from the Portland City  
Hall shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the Portland  
City Hall, but outside the identified border above, shall receive  
Zone III pay for all classifications.

For the following cities: ALBANY; BEND; COOS BAY; EUGENE; GRANTS  
PASS; KLAMATH FALLS; MEDFORD; ROSEBURG

All jobs or projects located within 30 miles of the respective  
city hall of the above mentioned cities shall receive Zone I pay  
for all classifications.

All jobs or projects located more than 30 miles and less than 50  
miles from the respective city hall of the above mentioned cities  
shall receive Zone II pay for all classifications.

All jobs or projects located more than 50 miles from the  
respective city hall of the above mentioned cities shall receive

Zone III pay for all classifications.

#### POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: CONCRETE: Batch Plant and/or Wet Mix Operator, three units or more; CRANE: Helicopter Operator, when used in erecting work; Whirley Operator, 90 ton and over; LATTICE BOOM CRANE: Operator 200 tons through 299 tons, and/or over 200 feet boom; HYDRAULIC CRANE: Hydraulic Crane Operator 90 tons through 199 tons with luffing or tower attachments; FLOATING EQUIPMENT: Floating Crane, 150 ton but less than 250 ton

GROUP 1A: HYDRAULIC CRANE: Hydraulic Operator, 200 tons and over (with luffing or tower attachment); LATTICE BOOM CRANE: Operator, 200 tons through 299 tons, with over 200 feet boom; FLOATING EQUIPMENT: Floating Crane 250 ton and over

GROUP 1B: LATTICE BOOM CRANE: Operator, 300 tons through 399 tons with over 200 feet boom; Operator 400 tons and over; FLOATING

EQUIPMENT: Floating Crane 350 ton and over

GROUP 2: ASPHALT: Asphalt Plant Operator (any type); Roto Mill, pavement profiler, operator, 6 foot lateral cut and over; BLADE: Auto Grader or "Trimmer" (Grade Checker required); Blade Operator, Robotic; BULLDOZERS: Bulldozer operator over 120,000 lbs and above; Bulldozer operator, twin engine; Bulldozer Operator, tandem, quadnine, D10, D11, and similar type; Bulldozere Robotic Equipment (any type; CONCRETE: Batch Plant and/or Wet Mix Operator, one and two drum; Automatic Concrete Slip Form Paver Operator; Concrete Canal Line Operator; Concrete Profiler, Diamond Head; CRANE: Cableway Operator, 25 tons and over; HYDRAULIC CRANE: Hydraulic crane operator 90 tons through 199 tons (with luffing or tower attachment); TOWER/WHIRLEY OPERATOR: Tower Crane Operator; Whirley Operator, under 90 tons; LATTICE BOOM CRANE: 90 through 199 tons and/or 150 to 200 feet boom; CRUSHER: Crusher Plant Operator; FLOATING EQUIPMENT: Floating Clamshell, etc.operator, 3 cu. yds. and over; Floating Crane (derrick barge) Operator, 30 tons but less than 150 tons; LOADERS: Loader operator, 120,000 lbs. and above; REMOTE CONTROL: Remote controlled earth-moving equipment; RUBBER-TIRED SCRAPERS: Rubber-tired scraper operator, with tandem scrapers, multi-engine; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Shovel, Dragline, Clamshell, operator 5 cu. yds and over; TRENCHING MACHINE: Wheel Excavator, under 750 cu. yds. per hour (Grade Oiler required); Canal Trimmer (Grade Oiler required); Wheel Excavator, over 750 cu. yds. per hour; Band Wagon (in conjunction with wheel excavator); UNDERWATER EQUIPMENT: Underwater Equipment Operator, remote or otherwise; HYDRAULIC HOES-EXCAVATOR: Excavator over 130,000 lbs.

GROUP 3: BULLDOZERS: Bulldozer operator, over 70,000 lbs. up to and including 120,000 lbs.; HYDRAULIC CRANE: Hydraulic crane operator, 50 tons through 89 tons (with luffing or tower attachment); LATTICE BOOM CRANES: Lattice Boom Crane-50 through 89 tons (and less than 150 feet boom); FORKLIFT: Rock Hound

Operator; HYDRAULIC HOES-EXCAVATOR: excavator over 80,000 lbs. through 130,000 lbs.; LOADERS: Loader operator 60,000 and less than 120,000; RUBBER-TIRED SCRAPER: Scraper Operator, with tandem scrapers; Self-loading, paddle wheel, auger type, finish and/or 2 or more units; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Shovel, Dragline, Clamshell operators 3 cu. yds. but less than 5 cu yds.

GROUP 4: ASPHALT: Screed Operator; Asphalt Paver operator (screeman required); BLADE: Blade operator; Blade operator, finish; Blade operator, externally controlled by electronic, mechanical hydraulic means; Blade operator, multi-engine; BULLDOZERS: Bulldozer Operator over 20,000 lbs and more than 100 horse up to 70,000 lbs; Drill Cat Operator; Side-boom Operator; Cable-Plow Operator (any type); CLEARING: Log Skidders; Chippers; Incinerator; Stump Splitter (loader mounted or similar type); Stump Grinder (loader mounted or similar type; Tub Grinder; Land Clearing Machine (Track mounted forestry mowing & grinding machine); Hydro Axe (loader mounted or similar type);

COMPACTORS SELF-PROPELLED: Compactor Operator, with blade; Compactor Operator, multi-engine; Compactor Operator, robotic; CONCRETE: Mixer Mobile Operator; Screed Operator; Concrete Cooling Machine Operator; Concrete Paving Road Mixer; Concrete Breaker; Reinforced Tank Banding Machine (K-17 or similar types); Laser Screed; CRANE: Chicago boom and similar types; Lift Slab Machine Operator; Boom type lifting device, 5 ton capacity or less; Hoist Operator, two (2) drum; Hoist Operator, three (3) or more drums; Derrick Operator, under 100 ton; Hoist Operator, stiff leg, guy derrick or similar type, 50 ton and over; Cableway Operator up to twenty (25) ton; Bridge Crane Operator, Locomotive, Gantry, Overhead; Cherry Picker or similar type crane hoist five (5) ton capacity or less; Hydraulic Crane Operator, under 50 tons; LATTICE BOOM CRANE OPERATOR: Lattice Boom Crane Operator, under 50 tons; CRUSHER: Generator Operator; Diesel-Electric Engineer; Grizzly Operator; DRILLING: Drill Doctor; Boring Machine Operator; Driller-Percussion, Diamond, Core, Cable, Rotary and similar type; Cat Drill (John Henry); Directional Drill Operator over 20,000 lbs pullback; FLOATING EQUIPMENT: Diesel-electric Engineer; Jack Operator, elevating barges, Barge Operator, self-unloading; Piledriver Operator (not crane type) (Deckhand required); Floating Clamshell, etc. Operator, under 3 cu. yds. (Fireman or Diesel-Electric Engineer required); Floating Crane (derrick barge) Operator, less than 30 tons; GENERATORS: Generator Operator; Diesel-electric Engineer; GUARDRAIL EQUIPMENT: Guardrail Punch Operator (all types); Guardrail Auger Operator (all types); Combination Guardrail machines, i.e., punch auger, etc.; HEATING PLANT: Surface Heater and Planer Operator; HYDRAULIC HOES EXCAVATOR: Robotic Hydraulic backhoe operator, track and wheel type up to and including 20,000 lbs. with any or all attachments; Excavator Operator over 20,000 lbs through 80,000 lbs.; LOADERS: Belt Loaders, Kolman and Ko Cal types; Loaders Operator, front end and overhead, 25,000 lbs and less than 60,000 lbs; Elevating Grader Operator by Tractor operator, Sierra, Euclid or similar types; PILEDRIVERS: Hammer Operator; Piledriver Operator (not crane type); PIPELINE, SEWER WATER: Pipe Cleaning Machine Operator; Pipe Doping Machine



Operator; Pipe Bending Machine Operator; Pipe Wrapping Machine Operator; Boring Machine Operator; Back Filling Machine Operator; REMOTE CONTROL: Concrete Cleaning Decontamination Machine Operator; Ultra High Pressure Water Jet Cutting Tool System Operator/Mechanic; Vacuum Blasting Machine Operator/mechanic; REPAIRMEN, HEAVY DUTY: Diesel Electric Engineer (Plant or Floating; Bolt Threading Machine operator; Drill Doctor (Bit Grinder); H.D. Mechanic; Machine Tool Operator; RUBBER-TIRED SCRAPERS: Rubber-tired Scraper Operator, single engine, single scraper; Self-loading, paddle wheel, auger type under 15 cu. yds.; Rubber-tired Scraper Operator, twin engine; Rubber-tired Scraper Operator, with push-pull attachments; Self Loading, paddle wheel, auger type 15 cu. yds. and over, single engine; Water pulls, water wagons; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER OPERATOR: Diesel Electric Engineer; Stationary Drag Scraper Operator; Shovel, Dragline, Clamshell, Operator under 3 cy yds.; Grade-all Operator; SURFACE (BASE) MATERIAL: Blade mounted spreaders, Ulrich and similar types; TRACTOR-RUBBERED TIRED: Tractor operator, rubber-tired, over 50 hp flywheel; Tractor

operator, with boom attachment; Rubber-tired dozers and pushers (Michigan, Cat, Hough type); Skip Loader, Drag Box; TRENCHING MACHINE: Trenching Machine operator, digging capacity over 3 ft depth; Back filling machine operator; TUNNEL: Mucking machine operator

GROUP 5: ASPHALT: Extrusion Machine Operator; Roller Operator (any asphalt mix); Asphalt Burner and Reconditioner Operator (any type); Roto-Mill, pavement profiler, ground man; BULLDOZERS: Bulldozer operator, 20,000 lbs. or less or 100 horse or less; COMPRESSORS: Compressor Operator (any power), over 1,250 cu. ft. total capacity; COMPACTORS: Compactor Operator, including vibratory; Wagner Pactor Operator or similar type (without blade); CONCRETE: Combination mixer and Compressor Operator, gunite work; Concrete Batch Plant Quality Control Operator; Belcrete Operator; Pumpcrete Operator (any type); Pavement Grinder and/or Grooving Machine Operator (riding type); Cement Pump Operator, Fuller-Kenyon and similar; Concrete Pump Operator; Grouting Machine Operator; Concrete mixer operator, single drum, under (5) bag capacity; Cast in place pipe laying machine; maginnis Internal Full slab vibrator operator; Concrete finishing machine operator, Clary, Johnson, Bidwell, Burgess Bridge deck or similar type; Curb Machine Operator, mechanical Berm, Curb and/or Curb and Gutter; Concrete Joint Machine Operator; Concrete Planer Operator; Tower Mobile Operator; Power Jumbo Operator setting slip forms in tunnels; Slip Form Pumps, power driven hydraulic lifting device for concrete forms; Concrete Paving Machine Operator; Concrete Finishing Machine Operator; Concrete Spreader Operator; CRANE: Helicopter Hoist Operator; Hoist Operator, single drum; Elevator Operator; A-frame Truck Operator, Double drum; Boom Truck Operator; HYDRAULIC CRANE OPERATOR: Hydraulic Boom Truck, Pittman; DRILLING: Churm Drill and Earth Boring Machine Operator; Directional Drill Operator over 20,000 lbs pullback; FLOATING EQUIPMENT: Fireman; FORKLIFT: Lull Hi-Lift Operator or similar type; Fork Lift, over 5 ton and/or robotic; HYDRAULIC HOES EXCAVATORS: Hydraulic Backhoe Operator, wheel type (Ford, John Deere, Case type);

Hydraulic Backhoe Operator track type up to and including 20,000 lbs.; LOADERS: Loaders, rubber-tired type, less than 25,000 lbs; Elevating Grader Operator, Tractor Towed requiring Operator or Grader; Elevating loader operator, Athey and similar types; OILERS: Service Oiler (Greaser); PIPELINE-SEWER WATER: Hydra hammer or similar types; Pavement Breaker Operator; PUMPS: Pump Operator, more than 5 (any size); Pot Rammer Operator; RAILROAD EQUIPMENT: Locomotive Operator, under 40 tons; Ballast Regulator Operator; Ballast Tamper Multi-Purpose Operator; Track Liner Operator; Tie Spacer Operator; Shuttle Car Operator; Locomotive Operator, 40 tons and over; MATERIAL HAULERS: Cat wagon DJB's Volvo similar types; Conveyed material hauler; SURFACING (BASE) MATERIAL: Rock Spreaders, self-propelled; Pulva-mixer or similar types; Chiip Spreading machine operator; Lime spreading operator, construction job siter; SWEEPERS: Sweeper operator (Wayne type) self-propelled construction job site; TRACTOR-RUBBER TIRED: Tractor operator, rubber-tired, 50 hp flywheel and under; Trenching machine operator, maximum digging capacity 3 ft depth; TUNNEL: Dinkey

GROUP 6: ASPHALT: Plant Oiler; Plant Fireman; Pugmill Operator (any type); Truck mounted asphalt spreader, with screed; COMPRESSORS: Compressor Operator (any power), under 1,250 cu. ft. total capacity; CONCRETE: Plant Oiler, Assistant Conveyor Operator; Conveyor Operator; Mixer Box Operator (C.T.B., dry batch, etc.); Cement Hog Operator; Concrete Saw Operator; Concrete Curing Machine Operator (riding type); Wire Mat or Brooming Machine Operator; CRANE: Oiler; Fireman, all equipment; Truck Crane Oiler Driver; A-frame Truck Operator, single drum; Tugger or Coffin Type Hoist Operator; CRUSHER: Crusher Oiler; Crusher Feeder; CRUSHER: Crusher oiler; Crusher feeder; DRILLING: Drill Tender; Auger Oiler; FLOATING EQUIPMENT: Deckhand; Boatman; FORKLIFT: Self-propelled Scaffolding Operator, construction job site (excluding working platform); Fork Lift or Lumber Stacker Operator, construction job site; Ross Carrier Operator, construction job site; GUARDRAIL EQUIPMENT: Oiler; Auger Oiler; Oiler, combination guardrail machines; Guardrail Punch Oiler; HEATING PLANT: Temporary Heating Plant Operator; LOADERS: Bobcat, skid steer (less than 1 cu yd.); Bucket Elevator Loader Operator, BarberGreene and similar types; OILERS: Oiler; Guardrail Punch Oiler; Truck Crane Oiler-Driver; Auger Oiler; Grade Oiler, required to check grade; Grade Checker; PIPELINE-SEWER WATER: Tar Pot Fireman; Tar Pot Fireman (power agitated); PUMPS: Pump Operator (any power); Hydrostatic Pump Operator; RAILROAD EQUIPMENT: Brakeman; Oiler; Switchman; Motorman; Ballast Jack Tamper Operator; SHOVEL, DRAGLINE, CLAMSHELL, SKOOPER, ETC. OPERATOR: Oiler, Grade Oiler (required to check grade); Grade Checker; Fireman; SWEEPER: Broom operator, self propelled, construction job site; SURFACING (BASE) MATERIAL: Roller Operator, grading of base rock (not asphalt); Tamping Machine operator, mechanical, self-propelled; Hydrographic Seeder Machine Operator; TRENCHING MACHINE: Oiler; Grade Oiler; TUNNEL: Conveyor operator; Air filtration equipment operator

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 ENGI0701E 06/01/2001

Rates                      Fringes

CLARK, COWLITZ, KICKITAT, PACIFIC (SOUTH), SKAMANIA,  
AND WAHIAKUM COUNTIES

DREDGING:

ZONE A		
LEVERMAN, HYDRAULIC	31.80	7.75
LEVERMAN, DIPPER, FLOATING CLAMSHELL	31.80	7.75
ASSISTANT ENGINEER	29.69	7.75
TENDERMAN	28.72	7.75
ASSISTANT MATE	26.15	7.75
ZONE B		
LEVERMAN, HYDRAULIC	33.80	7.75
LEVERMAN, DIPPER, FLOATING CLAMSHELL	33.80	7.75
ASSISTANT ENGINEER	31.69	7.75
TENDERMAN	30.72	7.75
ASSISTANT MATE	28.15	7.75
ZONE C		
LEVERMAN, HYDRAULIC	34.80	7.75
LEVERMAN, DIPPER, FLOATING CLAMSHELL	34.80	7.75
ASSISTANT ENGINEER	32.69	7.75
TENDERMAN	31.72	7.75
ASSISTANT MATE	29.15	7.75

ZONE DESCRIPTION FOR DREDGING:

ZONE A - All jobs or projects located within 30 road miles of  
Portland City Hall.

ZONE B - Over 30-50 road miles from Portland City Hall.

ZONE C - Over 50 road miles from Portland City Hall.

\*All jobs or projects shall be computed from the city hall by the  
shortest route to the geographical center of the project.

IRON0014F 07/01/2001

Rates                      Fringes

ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS, FERRY, FRANKLIN,  
GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND ORIELLE, SPOKANE,  
STEVENS, WALLA WALLA AND WHITMAN COUNTIES

IRONWORKERS	24.52	11.35
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IRON0029I 07/01/2001

Rates                      Fringes

CLARK, CLALLAM, CHELAN, COWLITZ, GRAYS HARBOR, ISLAND, JEFFERSON,  
KING, KITTITAS, KICKITAT, KITSAP, LEWIS, MASON, PACIFIC, PIERCE,  
SKAGIT, SKAMANIA, SNOHOMISH, THURSTON, WAHKAIAKUM, WHATCOM AND  
YAKIMA COUNTIES

IRONWORKERS 25.82 11.35

LABO0001D 06/01/2001

Rates Fringes  
CHELAN, DOUGLAS (WEST OF THE 120TH MERIDIAN), KITTITAS AND  
YAKIMA COUNTIES

LABORERS:

ZONE 1:

GROUP 1	14.46	5.80
GROUP 2	16.78	5.80
GROUP 3	18.50	5.80
GROUP 4	18.98	5.80
GROUP 5	19.34	5.80

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$ .70  
ZONE 3 - \$1.00

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE,  
AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective city  
hall  
ZONE 2 - More than 25 but less than 45 radius miles from the  
respective city hall  
ZONE 3 - More than 45 radius miles from the respective city hall

CALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS,  
MASON, PACIFIC (NORTH OF STRAIGHT LINE MADE BY EXTENDING THE  
NORTH BOUNDARY WAHKIAKUM COUNTY WEST TO THE PACIFIC OCEAN),  
PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM  
COUNTIES

LABORERS:

ZONE 1:

GROUP 1	16.92	5.80
GROUP 2	19.24	5.80
GROUP 3	23.92	5.80
GROUP 4	24.40	5.80
GROUP 5	24.76	5.80

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$ .70  
ZONE 3 - \$1.00

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT,  
SEATTLE, KENT, TACOMA, OLYMPIA,  
CENTRALIA, ABERDEEN, SHELTON, PT.  
TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective city  
hall  
ZONE 2 - More than 25 but less than 45 radius miles from the  
respective city hall

ZONE 3 - More than 45 radius miles from the respective city hall

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window Washer/Cleaner (detail clean-up, such as but not limited to cleaning floors, ceilings, walls, windows, etc., prior to final acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer; Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating Screed; Asbestos Abatement Laborer; Ballast Regulator Machine; Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement Finisher Tender; Change House or Dry Shack; Chipping Gun (under 30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete

Form Stripper; Curing Laborer; Demolition (wrecking and moving including charred material); Ditch Digger; Dump Person; Fine Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout Machine Tender; Grinders; Guardrail Erector; Hazardous Waste Worker (Level C); Maintenance Person; Material Yard Person; Pot Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer; Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Grade Checker and Transit Person; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B); High Scaler; Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Mortarman and Hodcarrier; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20'); Spreader (concrete); Tamper and Similar electric, air and glas operated tool; Timber Person-sewer (lagger shorer and cribber); Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Powderman; Re-Timberman; Hazardous Waste Worker (Level A).

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LABO0238E 06/01/2001

	Rates	Fringes
ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS (EAST OF THE 120TH MERIDIAN), FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND OREILLE, STEVENS, SPOKANE, WALLA WALLA AND WHITMAN COUNTIES		

LABORERS:  
ZONE 1:

GROUP 1	17.66	5.00
GROUP 2	19.76	5.00
GROUP 3	20.03	5.00
GROUP 4	20.30	5.00
GROUP 5	20.58	5.00
GROUP 6	21.95	5.00

Zone Differential (Add to Zone 1  
rate): \$2.00

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: 45 radius miles and over from the main post office.

#### LABORERS CLASSIFICATIONS

GROUP 1: Flagman; Landscape Laborer; Scaleman; Traffic Control Maintenance Laborer (to include erection and maintenance of barricades, signs and relief of flagperson); Window Washer/Cleaner (detail cleanup, such as, but not limited to cleaning floors, ceilings, walls, windows, etc. prior to final acceptance by the owner)

GROUP 2: Asbestos Abatement Worker; Brush Hog Feeder; Carpenter Tender; Cement Handler; Clean-up Laborer; Concrete Crewman (to include stripping of forms, hand operating jacks on slip form construction, application of concrete curing compounds, pumpcrete machine, signaling, handling the nozzle of squeezecrete or similar machine, 6 inches and smaller); Confined Space Attendant; Concrete Signalman; Crusher Feeder; Demolition (to include clean-up, burning, loading, wrecking and salvage of all material); Dumpman; Fence Erector; Firewatch; Form Cleaning Machine Feeder, Stacker; General Laborer; Grout Machine Header Tender; Guard Rail (to include guard rails, guide and reference posts, sign posts, and right-of-way markers); Hazardous Waste Worker, Level D (no respirator is used and skin protection is minimal); Miner, Class "A" (to include all bull gang, concrete crewman, dumpman and pumpcrete crewman, including distributing pipe, assembly & dismantle, and nipper); Nipper; Riprap Man; Sandblast Tailhoseman; Scaffold Erector (wood or steel); Stake Jumper; Structural Mover (to include separating foundation, preparation, cribbing, shoring, jacking and unloading of structures); Tailhoseman (water nozzle); Timber Bucker and Faller (by hand); Track Laborer (RR); Truck Loader; Well-Point Man; All Other Work Classifications Not Specially Listed Shall Be Classified As General Laborer

GROUP 3: Asphalt Raker; Asphalt Roller, walking; Cement Finisher Tender; Concrete Saw, walking; Demolition Torch; Dope Pot Firemen, non-mechanical; Driller Tender (when required to move and position machine); Form Setter, Paving; Grade Checker using level; Hazardous Waste Worker, Level C (uses a chemical "splash suit" and air purifying respirator); Jackhammer Operator; Miner, Class "B" (to include brakeman, finisher, vibrator, form setter); Nozzleman (to include squeeze and flo-crete nozzle); Nozzleman, water, air or steam; Pavement Breaker (under 90 lbs.);

Pipelayer, corrugated metal culvert; Pipelayer, multi-plate; Pot Tender; Power Buggy Operator; Power Tool Operator, gas, electric, pneumatic; Railroad Equipment, power driven, except dual mobile power spiker or puller; Railroad Power Spiker or Puller, dual mobile; Rodder and Spreader; Tamper (to include operation of Barco, Essex and similar tampers); Trencher, Shawnee; Tugger Operator; Wagon Drills; Water Pipe Liner; Wheelbarrow (power driven)

GROUP 4: Air and Hydraulic Track Drill; Brush Machine (to include horizontal construction joint cleanup brush machine, power propelled); Caisson Worker, free air; Chain Saw Operator and Faller; Concrete Stack (to include laborers when laborers working on free standing concrete stacks for smoke or fume control above 40 feet high); Guniting (to include operation of machine and nozzle); Hazardous Waste Worker, Level B (uses

same respirator protection as Level A. A supplied air line is provided in conjunction with a chemical "splash suit"); High Scaler; Laser Beam Operator (to include grade checker and elevation control); Miner, Class C (to include miner, nozzleman for concrete, laser beam operator and rigger on tunnels); Monitor Operator (air track or similar mounting); Mortar Mixer; Nozzleman (to include jet blasting nozzleman, over 1,200 lbs., jet blast machine power propelled, sandblast nozzle); Pavement Breaker (90 lbs. and over); Pipelayer (to include working topman, caulker, collarman, jointer, mortarman, rigger, jacker, shorer, valve or meter installer); Pipewrapper; Plasterer Tender; Vibrators (all)

GROUP 5 - Drills with Dual Masts; Hazardous Waste Worker, Level A (utilizes a fully encapsulated suit with a self-contained breathing apparatus or a supplied air line); Miner Class "D", (to include raise and shaft miner, laser beam operator on riases and shafts)

GROUP 6 - Powderman

LABO0238G 06/01/2001

	Rates	Fringes
COUNTIES EAST OF THE 120TH MERIDIAN: ADAMS, ASOTIN, BENTON, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, LINCOLN, OKANOGAN, PEND OREILLE, STEVENS, SPOKANE, WALLA WALLA, WHITMAN		
HOD CARRIERS	21.35	5.00

LABO0335A 06/01/2001

	Rates	Fringes
CLARK, COWLITZ, KICKITAT, PACIFIC (SOUTH OF A STRAIGHT LINE MADE BY EXTENDING THE NORTH BOUNDARY LINE OF WAHIAKUM COUNTY WEST TO THE PACIFIC OCEAN), SKAMANIA AND WAHIAKUM COUNTIES		

ZONE 1:

LABORERS:

GROUP 1	22.27	6.75
GROUP 2	22.77	6.75

GROUP 3	23.15	6.75
GROUP 4	23.47	6.75
GROUP 5	20.12	6.75
GROUP 6	18.06	6.75
GROUP 7	15.36	6.75

Zone Differential (Add to Zone 1 rates):

Zone 2 \$ 0.65  
 Zone 3 - 1.15  
 Zone 4 - 1.70  
 Zone 5 - 2.75

BASE POINTS: GOLDENDALE, LONGVIEW, AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city all.

ZONE 2: More than 30 miles but less than 40 miles from the

respective city hall.

ZONE 3: More than 40 miles but less than 50 miles from the  
 respective city hall.

ZONE 4: More than 50 miles but less than 80 miles from the  
 respective city hall.

ZONE 5: More than 80 miles from the respective city hall.

#### LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Plant Laborers; Asphalt Spreaders; Batch Weighman; Broomers; Brush Burners and Cutters; Car and Truck Loaders; Carpenter Tender; Change-House Man or Dry Shack Man; Choker Setter; Clean-up Laborers; Curing, Concrete; Demolition, Wrecking and Moving Laborers; Dumpers, road oiling crew; Dumpmen (for grading crew); Elevator Feeders; Guard Rail, Median Rail Reference Post, Guide Post, Right of Way Marker; Fine Graders; Fire Watch; Form Strippers (not swinging stages); General Laborers; Hazardous Waste Worker; Leverman or Aggregate Spreader (Flaherty and similar types); Loading Spotters; Material Yard Man (including electrical); Pittsburgh Chipper Operator or Similar Types; Railroad Track Laborers; Ribbon Setters (including steel forms); Rip Rap Man (hand placed); Road Pump Tender; Sewer Labor; Signalman; Skipman; Slopers; Spraymen; Stake Chaser; Stockpiler; Tie Back Shoring; Timber Faller and Bucker (hand labor); Toolroom Man (at job site); Tunnel Bullgang (above ground); Weight-Man-Crusher (aggregate when used)

GROUP 2: Applicator (including pot power tender for same), applying protective material by hand or nozzle on utility lines or storage tanks on project; Brush Cutters (power saw); Burners; Choker Splicer; Clary Power Spreader and similar types; Clean-up Nozzleman-Green Cutter (concrete, rock, etc.); Concrete Power Buggyman; Concrete Laborer; Crusher Feeder; Demolition and Wrecking Charred Materials; Guniting Nozzleman Tender; Guniting or Sand Blasting Pot Tender; Handlers or Mixers of all Materials of an irritating nature (including cement and lime); Tool Operators (includes but not limited to: Dry Pack Machine; Jackhammer; Chipping Guns; Paving Breakers); Pipe Doping and Wrapping; Post Hole Digger, air, gas or electric; Vibrating Screed; Tampers; Sand Blasting (Wet); Stake-Setter; Tunnel-Muckers, Brakemen,



Concrete Crew, Bullgang (underground)

GROUP 3: Asbestos Removal; Bit Grinder; Drill Doctor; Drill Operators, air tracks, cat drills, wagon drills, rubber-mounted drills, and other similar types including at crusher plants; Gunite Nozzelman; High Scalers, Strippers and Drillers (covers work in swinging stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping); Manhole Builder; Powdermen; Concrete Saw Operator; Powdermen; Power Saw Operators (Bucking and Falling); Pumpcrete Nozzlemen; Sand Blasting (Dry); Sewer Timberman; Track Liners, Anchor Machines, Ballast Regulators, Multiple Tampers, Power Jacks, Tugger Operator; Tunnel-Chuck Tenders, Nippers and Timberman; Vibrator; Water Blaster

GROUP 4: Asphalt Raker; Concrete Saw Operator (walls);

Concrete Nozzelman; Grade Checker; Pipelayer; Laser Beam (pipelaying)-applicable when employee assigned to move, set up, align; Laser Beam; Tunnel Miners; Motorman-Dinky Locomotive-Tunnel; Powderman-Tunnel; Shield Operator-Tunnel

GROUP 5: Traffic Flaggers

GROUP 6: Fence Builders

GROUP 7: Landscaping or Planting Laborers

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LABO0335L 06/01/2001

	Rates	Fringes
CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH OF A STRAIGHT LINE MADE BY EXTENDING THE NORTH BOUNDARY LINE OF WAHIAKUM COUNTY WEST TO THE PACIFIC OCEAN), SKAMANIA AND WAHIAKUM COUNTIES		
HOD CARRIERS	24.64	5.75

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PAIN0005B 06/01/2001

	Rates	Fringes
STATEWIDE EXCEPT CLARK, COWLITZ, KLICKITAT, PACIFIC (SOUTH), SKAMANIA, AND WAHIAKUM COUNTIES		
STRIPERS	21.25	6.01

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PAIN0005D 03/01/2000

	Rates	Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM COUNTIES		
PAINTERS	22.94	3.73

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PAIN0005G 07/01/2001

	Rates	Fringes
ADAMS, ASOTIN; BENTON AND FRANKLIN (EXCEPT HANFORD SITE); CHELAN,		

COLUMBIA, DOUGLAS, FERRY, GARFIELD, GRANT, KITTITAS, LINCOLN,  
OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA,  
WHITMAN AND YAKIMA COUNTIES

PAINTERS\*:

Brush, Roller, Striping, Steam-cleaning and Spray	19.17	4.24
Application of Cold Tar Products, Epoxies, Polyure thanes, Acids, Radiation Resistant Material, Water and Sandblasting, Bridges, Towers, Tanks, Stacks, Steeples	20.17	4.24
TV Radio, Electrical Transmission Towers	20.92	4.24
Lead Abatement, Asbestos  Abatement	20.17	4.24

\*\$.70 shall be paid over and above the basic wage rates listed  
for work on swing stages and high work of over 30 feet.

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PAIN0055C 11/01/1999

	Rates	Fringes
CLARK, COWLITZ, KLINKITAT, PACIFIC, SKAMANIA, AND WAHIAKUM COUNTIES		

PAINTERS:

Brush & Roller	17.10	3.48
Spray and Sandblasting	17.70	3.48
High work - All work 60 ft. or higher	17.60	3.48

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PAIN0055L 06/01/2000

	Rates	Fringes
CLARK, COWLITZ, KLINKITAT, SKAMANIA and WAHIAKUM COUNTIES		

PAINTERS:

HIGHWAY AND PARKING LOT STRIPER	21.88	4.76
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PLAS0072E 06/01/1999

	Rates	Fringes
ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT, KITTITAS, LINCOLN, OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, WHITMAN, AND YAKIMA COUNTIES		

ZONE 1:

CEMENT MASONS	21.57	5.24
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Zone Differential (Add to Zone 1  
rate): Zone 2 - \$2.00

BASE POINTS: Spokane, Pasco, Moses Lake, Lewiston

Zone 1: 0 - 45 radius miles from the main post office

Zone 2: Over 45 radius miles from the main post office

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PLAS0528A

PLAS0528A 12/01/2001

	Rates	Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (NORTH), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON, AND WHATCOM COUNTIES		

CEMENT MASON	27.16	8.99
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COMPOSITION, COLOR MASTIC, TROWEL MACHINE, GRINDER, POWER TOOLS, GUNNITE NOZZLE	26.41	8.99
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PLAS0555B 06/01/2001

	Rates	Fringes
CLARK, COWLITZ, KLIKITAT, PACIFIC (SOUTH), SKAMANIA, AND WAHIAKUM COUNTIES		

ZONE 1:

CEMENT MASONS	24.04	9.00
COMPOSITION WORKERS AND POWER MACHINERY OPERATORS	24.48	9.00
CEMENT MASONS ON SUSPENDED, SWINGING AND/OR HANGING SCAFFOLD	24.48	9.00
CEMENT MASONS DOING BOTH COMPOSITION/POWER MACHINERY AND SUSPENDED/HANGING SCAFFOLD	24.93	9.00

Zone Differential (Add To Zone 1 Rates):

Zone 2 -	\$0.65
Zone 3 -	1.15
Zone 4 -	1.70
Zone 5 -	2.75

BASE POINTS: BEND, CORVALLIS, EUGENE, LONGVIEW, MEDFORD,  
PORTLAND, SALEM, THE DALLES, VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall

ZONE 2: More than 30 miles but less than 40 miles from the  
respective city hall.

ZONE 3: More than 40 miles but less than 50 miles from the  
respective city hall.

ZONE 4: More than 50 miles but less than 80 miles from the  
respective city hall.

ZONE 5: More than 80 miles from the respective city hall

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PLUM0032B 01/01/2002		
	Rates	Fringes
CLALLAM, KING AND JEFFERSON COUNTIES		
PLUMBERS AND PIPEFITTERS	32.08	11.53
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PLUM0032D 06/01/1999		
	Rates	Fringes
CHELAN, KITTITAS (NORTHERN TIP), DOUGLAS (NORTH), AND OKANOGAN (NORTH) COUNTIES		
PLUMBERS AND PIPEFITTERS	23.47	8.67
-----		
PLUM0044C 06/01/2001		
	Rates	Fringes
ADAMS (NORTHERN PART), ASOTIN (CLARKSTON ONLY), FERRY (EASTERN PART), LINCOLN (EASTERN PART), PEND ORIELLE, STEVENS, SPOKANE, AND WHITMAN COUNTIES		
PLUMBERS AND PIPEFITTERS	26.21	9.14
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* PLUM0082A 06/01/2001		
	Rates	Fringes
CLARK (NORTHERN TIP INCLUDING WOODLAND), COWLITZ, GRAYS HARBOR, LEWIS, MASON (EXCLUDING NE SECTION), PACIFIC, PIERCE SKAMANIA, THURSTON AND WAHIAKUM COUNTIES		
PLUMBERS AND PIPEFITTERS	24.57	14.72
-----		
PLUM0265C 06/01/2001		
	Rates	Fringes
ISLAND, SKAGIT, SNOHOMISH, SAN JUAN AND WHATCOM COUNTIES		
PLUMBERS AND PIPEFITTERS	28.37	10.24
-----		
PLUM0290K 10/01/2001		
	Rates	Fringes
CLARK (ALL EXCLUDING NORTHERN TIP INCLUDING CITY OF WOODLAND)		
PLUMBERS AND PIPEFITTERS	31.52	10.80
-----		
PLUM0598E 06/01/2001		
	Rates	Fringes
ADAMS (SOUTHERN PART), ASOTIN (EXCLUDING THE CITY OF CLARKSTON), BENTON, COLUMBIA, DOUGLAS (EASTERN HALF), FERRY (WESTERN PART), FRANKLIN, GARFIELD, GRANT, KITTITAS (ALL BUT NORTHERN TIP), KICKITAT, LINCOLN (WESTERN PART), OKANOGAN (EASTERN), WALLA WALLA AND YAKIMA COUNTIES		
PLUMBERS	28.85	11.55
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PLUM0631A 06/01/2001

	Rates	Fringes
MASON (NE SECTION), AND KITSAP COUNTIES		

PLUMBERS/PIPEFITTERS:

All new construction, additions,  
and remodeling of commercial  
building projects such as:  
cocktail lounges and taverns,  
professional buildings, medical  
clinics, retail stores, hotels  
and motels, restaurants and fast

food types, gasoline service  
stations, and car washes where  
the plumbing and mechanical cost  
of the project is less than  
\$100,000

14.55	7.98
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All other work where the plumbing  
and mechanical cost of the project  
is \$100,000 and over

24.65	13.41
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TEAM0037C 06/01/2001

	Rates	Fringes
CLARK, COWLITZ, KLUCKITAT, PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), SKAMANIA, AND WAHIAKUM COUNTIES		

TRUCK DRIVERS

ZONE 1:

GROUP 1	23.40	8.30
GROUP 2	23.52	8.30
GROUP 3	23.65	8.30
GROUP 4	23.91	8.30
GROUP 5	24.13	8.30
GROUP 6	24.29	8.30
GROUP 7	24.49	8.30

Zone Differential (Add to Zone 1 Rates):

Zone 2 - \$0.65  
Zone 3 - 1.15  
Zone 4 - 1.70  
Zone 5 - 2.75

BASE POINTS: ASTORIA, THE DALLES, LONGVIEW AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall.  
ZONE 2: More than 30 miles but less than 40 miles from the  
respective city hall.  
ZONE 3: More than 40 miles but less than 50 miles from the  
respective city hall.  
ZONE 4: More than 50 miles but less than 80 miles from the  
respective city hall.

ZONE 5: More than 80 miles from the respective city hall.

#### TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: A Frame or Hydra lift truck w/load bearing surface; Articulated dump truck; Battery Rebuilders; Bus or Manhaul Driver; Concrete Buggies (power operated); Concrete pump truck; Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: up to and including 10 cu. yds.; Lift Jitneys, Fork Lifts (all sizes in loading, unloading and transporting material on job site); Loader and/or Leverman on Concrete Dry Batch Plant (manually operated); Pilot Car; Pickup truck; Solo Flat Bed and misc. Body Trucks, 0-10 tons; Truck Tender; Truck Mechanic Tender; Water Wagons (rated

capacity) up to 3,000 gallons; Transit Mix and Wet or Dry Mix - 5 cu. yds. and under; Lubrication Man, Fuel Truck Driver, Tireman, Wash Rack, Steam Cleaner or combinations; Team Driver; Slurry Truck Driver or Leverman; Tireman

GROUP 2: Boom truck/hydra lift or retracting crane; Challenger; Dumpsters or similar equipment all sizes; Dump Trucks/articulated dumps 6 cu to 10 cu.; Flaherty Spreader Driver or Leverman; Lowbed Equipment, Flat Bed Semi-trailer or doubles transporting equipment or wet or dry materials; Lumber Carrier, Driver-Straddle Carrier (used in loading, unloading and transporting of materials on job site); Oil Distributor Driver or Leverman; Transit mix and wet or dry mix trucks: over 5 cu. yds. and including 7 cu. yds.; Vacuum trucks; Water truck/Wagons (rated capacity) over 3,000 to 5,000 gallons

GROUP 3: Ammonia nitrate distributor driver; Dump trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 10 cu. yds. and including 30 cu. yds. includes Articulated dump trucks; Selfpropelled street sweeper; Transit mix and wet or dry mix truck: over 7 cu yds. and including 11 cu yds.; Truck Mechanic Welder Body Repairman; Utility and cleanup truck; Water Wagons (rated capacity) over 5,000 to 10,000 gallons

GROUP 4: Asphalt burner; Dump Trucks, side, end and bottom dumps, including Semi-Trucks and Trains or combinations thereof: over 30 cu. yds. and including 50 cu. yds. includes articulated dump trucks; Fire guard; Transit Mix and Wet or Dry Mix Trucks, over 11 cu. yds. and including 15 cu. yds.; Water Wagon (rated capacity) over 10,000 gallons to 15,000 gallons

GROUP 5: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 50 cu. yds. and including 60 cu. yds. includes articulated dump trucks

GROUP 6: Bulk cement spreader w/o auger; Dry prebatch concrete mix trucks; Dump trucks, side, end and bottom dumps, including Semi Trucks and Trains of combinations thereof: over 60 cu. yds. and including 80 cu. yds., and includes articulated dump trucks; Skid truck

GROUP 7: Dump Trucks, side, end and bottom dumps, including Semi Trucks and Trains or combinations thereof: over 80 cu. yds. and including 100 cu. yds., includes articulated dump trucks; Industrial lift truck (mechanical tailgate)

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TEAM0174A 06/01/2001

	Rates	Fringes
CLALLAM, GRAYS HARBOR, ISLAND, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SAN JUAN, SKAGIT, SNOHOMISH, THURSTON AND WHATCOM COUNTIES		

TRUCK DRIVERS;

GROUP 1:	24.94	9.12
GROUP 2:	24.36	9.12
GROUP 3:	22.08	9.12
GROUP 4:	18.00	9.12
GROUP 5:	24.70	9.12

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - "A-frame or Hydralift" trucks and Boom trucks or similar equipment when "A" frame or "Hydralift" and Boom truck or similar equipment is used; Buggymobile; Bulk Cement Tanker; Dumpsters and similar equipment, Tournorockers, Tournowagon, Tournotrailer, Cat DW series, Terra Cobra, Le Tourneau, Westinghouse, Athye Wagon, Euclid Two and Four-Wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump Trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with 16 yards to 30 yards capacity: Over 30 yards \$.15 per hour additional for each 10 yard increment; Explosive Truck (field mix) and similar equipment; Hyster Operators (handling bulk loose aggregates); Lowbed and Heavy Duty Trailer; Road Oil Distributor Driver; Spreader, Flaherty Transit mix used exclusively in heavy construction; Water Wagon and Tank Truck-3,000 gallons and over capacity

GROUP 2 - Bulllifts, or similar equipment used in loading or unloading trucks, transporting materials on job site; Dumpsters, and similar equipment, Tournorockers, Tournowagon, Turnotrailer, Cat. D.W. Series, Terra Cobra, Le Tourneau, Westinghouse, Athye wagon, Euclid two and four-wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with less than 16 yards capacity; Flatbed (Dual Rear Axle); Grease Truck, Fuel Truck, Greaser, Battery Service Man and/or Tire Service Man; Leverman and loader at bunkers and batch plants; Oil tank transport; Scissor truck; Slurry Truck; Sno-Go and similar equipment; Swampers; Straddler Carrier (Ross, Hyster) and similar equipment; Team Driver; Tractor (small, rubber-tired) (when used within Teamster jurisdiction); Vacuum truck; Water Wagon and Tank trucks-less than 3,000 gallons capacity; Winch Truck; Wrecker, Tow truck and similar equipment

GROUP 3 - Flatbed (single rear axle); Pickup Sweeper; Pickup Truck. (Adjust Group 3 upward by \$2.00 per hour for onsite work only)

GROUP 4 - Escort or Pilot Car

GROUP 5 - Mechanic

#### HAZMAT PROJECTS

Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C: +\$.25 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B: +\$.50 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit."

LEVEL A: +\$.75 per hour - This level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

#### ZONE DIFFERENTIALS

Zone pay will be calculated from the city center of the following listed cities:

BELLINGHAM	CENTRALIA	RAYMOND	OLYMPIA
EVERETT	SHELTON	ANACORTES	BELLEVUE
SEATTLE	PORT ANGELES	MT. VERNON	KENT
TACOMA	PORT TOWNSEND	ABERDEEN	BREMERTON

TRAVEL - Zone A - 0 - 25 miles - Free Zone  
Zone B - 25 - 45 miles - \$ .70 per hour.  
Zone C - Over 45 miles - \$1.00 per hour.

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TEAM0760C 06/01/1999

	Rates	Fringes
ADAMS, ASOTIN, BENTON, CHELAN, COLUMBIA, DOUGLAS, FERRY, FRANKLIN, GARFIELD, GRANT KITTITAS, LINCOLN, OKANOGAN, PEND OREILLE, SPOKANE, STEVENS, WALLA WALLA, AND WHITMAN COUNTIES		

#### TRUCK DRIVERS

(ANYONE WORKING ON HAZMAT JOBS SEE FOOTNOTE A BELOW)

ZONE 1: (INCLUDES ALL OF YAKIMA COUNTY)

GROUP 1	17.42	7.31
GROUP 2	19.69	7.31
GROUP 3	20.19	7.31
GROUP 4	20.52	7.31
GROUP 5	20.63	7.31
GROUP 6	20.80	7.31
GROUP 7	21.33	7.31
GROUP 8	21.66	7.31



Zone Differential (Add to Zone 1  
rate: Zone 2 - \$2.00)

BASE POINTS: Spokane, Moses Lake, Pasco, Lewiston

Zone 1: 0-45 radius miles from the main post office.

Zone 2: 45 radius miles and over from the main post office

#### TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car; Employee Haul; Power Boat

Hauling Employees or Material

GROUP 2: Fish Truck; Flat Bed Truck; Fork Lift (3000 lbs. and under); Leverperson (loading trucks at bunkers); Trailer Mounted Hydro Seeder and Mulcher; Seeder & Mulcher; Stationary Fuel Operator; Tractor (small, rubber-tired, pulling trailer or similar equipment)

GROUP 3: Auto Crane (2000 lbs. capacity); Buggy Mobile & Similar; Bulk Cement Tanks & Spreader; Dumptor (6 yds. & under); Flat Bed Truck with Hydraulic System; Fork Lift (3001-16,000 lbs.); Fuel Truck Driver, Steamcleaner & Washer; Power Operated Sweeper; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry Truck Driver; Straddle Carrier (Ross, Hyster, & similar); Tireperson; Transit Mixers & Truck Hauling Concrete (3 yd. to & including 6 yds.); Trucks, side, end, bottom & articulated end dump (3 yards to and including 6 yds.); Warehouseperson (to include shipping & receiving); Wrecker & Tow Truck

GROUP 4: A-Frame; Burner, Cutter, & Welder; Service Greaser; Trucks, side, end, bottom & articulated end dump (over 6 yards to and including 12 yds.); Truck Mounted Hydro Seeder; Warehouseperson; Water Tank truck (0-8,000 gallons)

GROUP 5: Dumptor (over 6 yds.); Lowboy (50 tons & under); Self-loading Roll Off; Semi-Truck & Trailer; Tractor with Steer Trailer; Transit Mixers and Trucks Hauling Concrete (over 6 yds. to and including 10 yds.); Trucks, side, end, bottom and end dump (over 12 yds. to & including 20 yds.); Truck-Mounted Crane (with load bearing surface either mounted or pulled, up to 14 ton); Vacuum Truck (super sucker, guzzler, etc.)

GROUP 6: Flaherty Spreader Box Driver; Flowboys; Fork Lift (over 16,000 lbs.); Dumps (Semi-end); Mechanic (Field); Semi-end Dumps; Transfer Truck & Trailer; Transit Mixers & Trucks Hauling Concrete (over 10 yds. to & including 20 yds.); Trucks, side, end, bottom and articulated end dump (over 20 yds. to & including 40 yds.); Truck and Pup; Tournarocker, DW's & similar with 2 or more 4 wheel-power tractor with trailer, gallonage or yardage scale, whichever is greater Water Tank Truck (8,001-14,000 gallons)

GROUP 7: Oil Distributor Driver; Stringer Truck (cable operated trailer); Transit Mixers & Trucks Hauling Concrete (over 20 yds.); Truck, side, end, bottom end dump (over 40 yds. to & including 100 yds.); Truck Mounted Crane (with load bearing

surface either mounted or pulled (16 through 25 tons);

GROUP 8: Prime Movers and Stinger Truck; Trucks, side, end, bottom and articulated end dump (over 100 yds.); Helicopter Pilot Hauling Employees or Materials

Footnote A - Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C-D: - \$.50 PER HOUR (This is the lowest level of protection. This level may use an air purifying

respirator or additional protective clothing.

LEVEL A-B: - \$1.00 PER HOUR (Uses supplied air in conjunction with a chemical splash suit or fully encapsulated suit with a self-contained breathing apparatus.

NOTE: Trucks Pulling Equipment Trailers: shall receive \$.15/hour over applicable truck rate

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
=====

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).  
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In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.)

and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations

Wage and Hour Division  
U. S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U. S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.  
END OF GENERAL DECISION

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GENERAL DECISION **WA020002** 04/05/2002 WA2

Date: April 5, 2002

General Decision Number **WA020002**

Superseded General Decision No. WA010002

State: Washington

Construction Type:  
BUILDING

County(ies):

CHELAN	KITSAP	PIERCE
CLALLAM	KITTITAS	SNOHOMISH
GRAYS HARBOR	LEWIS	THURSTON
JEFFERSON	MASON	
KING	PACIFIC	

BUILDING CONSTRUCTION PROJECTS (does not include residential construction consisting of single family homes and apartments up to and including 4 stories)

Modification Number	Publication Date
0	03/01/2002
1	03/08/2002
2	03/22/2002
3	03/29/2002
4	04/05/2002

COUNTY(ies):

CHELAN	KITSAP	PIERCE
CLALLAM	KITTITAS	SNOHOMISH
GRAYS HARBOR	LEWIS	THURSTON
JEFFERSON	MASON	
KING	PACIFIC	

ASBE0007A 01/01/2002

	Rates	Fringes
ASBESTOS WORKERS/INSULATORS: (Includes application of all insulating materials, protective coverings, coating and finishes to all types of mechanical systems)	29.07	6.79

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BOIL0242B 10/01/2000

	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
BOILERMAKERS	25.32	9.81

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BOIL0502B	01/01/2002		
		Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC, PIERCE, SNOHOMISH AND THURSTON COUNTIES			
BOILERMAKERS		26.27	12.20
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BRWA0001A	06/01/2000		
		Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (northern part), PIERCE, SNOHOMISH AND THURSTON COUNTIES			
BRICKLAYERS		29.13	6.74
-----			
BRWA0001F	05/01/2000		
		Rates	Fringes
PACIFIC COUNTY (SOUTHERN PART)			
BRICKLAYERS		24.94	8.03
MARBLE MASONS		25.94	8.03
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BRWA0001G	05/01/1997		
		Rates	Fringes
PACIFIC (SOUTHERN PORTION) COUNTY			
TILE SETTER AND TERRAZZO WORKERS		22.18	5.82
TILE AND TERRAZZO FINISHERS		16.77	4.27
-----			
BRWA0001H	06/01/1999		
		Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (NORTHERN HALF), PIERCE, THURSTON AND SNOHOMISH COUNTIES			
TILE AND TERRAZZO WORKERS		24.92	6.06
TILE AND TERRAZZO FINISHERS		19.55	5.56
-----			
BRWA0003A	06/01/1999		
		Rates	Fringes
CHELAN AND KITTITAS COUNTIES			
BRICKLAYERS		22.36	7.06
-----			
BRWA0003E	07/01/2000		
		Rates	Fringes
CLELAN AND KITTITAS			
TILE AND TERRAZZO FINISHERS		14.70	5.83
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BRWA0003F	07/01/2000		

	Rates	Fringes
CLELAN AND KITTITAS		
TERRAZZO WORKERS & TILE LAYER	18.50	5.83

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CARP0770E 12/01/2001

	Rates	Fringes
WESTERN WASHINGTON: CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (NORTH), PIERCE, SNOHOMISH AND THURSTON COUNTIES		

CARPENTERS AND DRYWALL APPLICATORS	27.54	7.61
CARPENTERS ON CREOSOTE MATERIAL	27.64	7.61
INSULATION APPLICATORS	25.09	7.61
SAWFILERS, STATIONARY POWER SAW OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLER, FLOOR SANDER OPERATORS OF OTHER STATIONARY WOOD WORKING TOOLS	27.67	7.61
MILLWRIGHT AND MACHINE ERECTORS	28.54	7.61
ACOUSTICAL WOKRERS	27.70	7.61
PILEDRIIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING OR CRESOTE TREATED MATERIAL, ALL PILING	27.74	7.61
PILDRIVER, BRIDGE DOCK &		
WHARF CARPENTERS	27.54	7.61
DIVERS	67.96	7.61
DIVERS TENDER	30.24	7.61

(HOURLY ZONE PAY APPLICABLE TO ALL CLASSIFICATIONS EXCEPT  
MILLWRIGHT AND PILEDRIIVER)

Hourly Zone Pay shall be paid on jobs located outside  
of the free zone computed from the city center of the  
following listed cities:

Seattle	Olympia	Bellingham
Auburn	Bremerton	Anacortes
Renton	Shelton	Yakima
Aberdeen-Hoquiam	Tacoma	Wenatchee
Ellensburg	Everett	Port Angeles
Centralia	Mount Vernon	Sunnyside
Chelan	Pt. Townsend	

Zone Pay		
0 -25	radius miles	Free
25-35	radius miles	\$1.00/hour
35-45	radius miles	\$1.15/hour
45-55	radius miles	\$1.35/hour
Over 55	radius miles	\$1.55/hour

(HOURLY ZONE PAY - MILLWRIGHTS AND PILEDRIIVERS ONLY)

Hour Zone Pay shall be computed from Seattle Union Hall, Tacoma City center, and Everett City center

Zone Pay		
0 -25	radius miles	Free
25-45	radius miles	\$ .70/hour
Over 45	radius miles	\$1.50/hour

Millwrights and Piledrivers who reside in Aberdeen, Bellingham, Port Angeles, Mount Vernon, Olympia, Wenatchee, or Yakima Local Union jurisdiction areas, working on jobs in their respective area, shall have their Zone Pay measured from their respective city center

CENTRAL WASHINGTON: CHELAN AND KITTITAS COUNTIES

CARPENTERS AND DRYWALL APPLICATORS	20.72	7.47
CARPENTERS ON CREOSOTED MATERIALS	20.82	7.47
INSULATION APPLICATORS	20.72	7.47
SAWFILER, STATIONARY POWER SAW OPERATORS, FLOOR FINISHER, FLOOR LAYER, SHINGLERS, FLOOR SANDER OPERATOR AND OPERATORS OF OTHER STATIONARY WOOD WORKING TOOLS	20.85	7.47
MILLWRIGHTS AND MACHINE ERECTORS	28.22	7.47
ACCOUSTICAL WORKERS	20.98	7.47
PILDRIVER, DRIVING, PULLING, CUTTING, PLACING COLLARS, SETTING, WELDING, OR CREOSOTE TREATED MATERIAL, ALL PILING		
	27.22	7.47
PILEDRIIVER, BRIDGE DOCK & WHARF CARPENTERS	27.42	7.47
DIVERS	67.18	7.47
DIVERS TENDER	29.89	7.47

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\* CARP9003A 12/01/2001

	Rates	Fringes
PACIFIC COUNTY (South of a straight line made by extending the north boundary line of Wahkiakum County west to Willapa Bay to the Pacific Ocean, and thence north through the natural waterway to the Pacific Ocean (this will include the entire peninsula west of Willapa Bay)		

SEE ZONE DESCRIPTION FOR CITIES BASE POINTS

ZONE 1:

CARPENTERS	26.83	8.29
DRYWALL, ACOUSTICAL & LATHERS	26.83	8.29
FLOOR LAYERS & FLOOR FINISHERS (the laying of all hardwood floors nailed and mastic set, parquet and wood-type tiles, and block floors, the sanding and		



finishing of floors, the preparation of old and new floors when the materials mentioned above are to be installed; INSULATORS (fiberglass and similar irritating material)	26.98	8.29
MILLWRIGHTS	27.33	8.29
PILEDRIVERS	27.33	8.29
DIVERS	63.75	8.29
DIVERS TENDERS	29.33	8.29

Zone Differential (Add to Zone 1 rates):

Zone 2 -	\$0.85
Zone 3 -	1.25
Zone 4 -	1.70
Zone 5 -	2.00
Zone 6 -	3.00

BASEPOINTS: GOLDENDALE, LONGVIEW, AND VANCOUVER

ZONE 1: Projects located within 30 miles of the respective city hall of the above mentioned cities

ZONE 2: Projects located more than 30 miles and less than 40 miles of the respective city of the above mentioned cities

ZONE 3: Projects located more than 40 miles and less than 50 miles of the respective city of the above mentioned cities

ZONE 4: Projects located more than 50 miles and less than 60 miles of the respective city of the above mentioned cities.

ZONE 5: Projects located more than 60 miles and less than 70 miles of the respective city of the above mentioned cities

ZONE 6: Projects located more than 70 miles of the respected city of the above mentioned cities

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ELEC0046B 12/03/2001		
	Rates	Fringes
CALLAM, JEFFERSON, KING AND KITSAP COUNTIES		
ELECTRICIANS	31.50	3%+8.88
CABLE SPLICERS	34.65	3%+8.88

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ELEC0046C 06/01/2001		
	Rates	Fringes
CALLAM, JEFFERSON, KING, KITSAP COUNTIES		
SOUND AND COMMUNICATION		
TECHNICIAN	20.11	4.59

SCOPE OF WORK

Includes the installation, testing, service and maintenance, of

the following systems which utilize the transmission and/or transference of voice, sound vision and digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms, fire alarms and life safety systems (hang, terminate devices and panels and to conduct functional and systems tests), and low voltage master clock systems.

#### WORK EXCLUDED

Raceway systems are not covered (excluding Ladder-Rack for the purpose of the above listed systems). Chases and/or nipples (not to exceed 10 feet) may be installed on open wiring systems.

Energy management systems.

SCADA (Supervisory Control and Data Acquisition) when not intrinsic to the above listed systems (in the scope).

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ELEC0076A 07/01/2001		
	Rates	Fringes
GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE, THURSTON COUNTIES		
ELECTRICIANS	28.29	3%+10.32
CABLE SPLICERS	31.12	3%+10.32

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ELEC0076D 06/01/2000		
	Rates	Fringes
GRAYS HARBOR, LEWIS, MASON, PACIFIC, PIERCE AND THURSTON COUNTIES		
SOUND AND COMMUNICATIONS		
TECHNICIAN	18.59	5.24

#### SCOPE OF WORK

Includes the installation, testing, service and maintenance, of the following systems which utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background-foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems

SCADA (Supervisory control/data acquisition

PCM (Pulse code modulation)

Inventory control systems

Digital data systems

- Broadband & baseband and carriers
- Point of sale systems
- VSAT data systems
- Data communication systems
- RF and remote control systems
- Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems

- Background-Foreground Music
- Intercom and Telephone Interconnect Systems
- Sound and Musical Entertainment Systems
- Nurse Call Systems
- Radio Page Systems
- School Intercom and Sound Systems
- Burglar Alarm Systems
- Low-Voltage Master Clock Systems
- Multi-Media/Multiplex Systems
- Telephone Systems
- RF Systems and Antennas and Wave Guide

C. \*Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems

- Television Monitoring and Surveillance Systems
- Video Security Systems
- Video Entertainment Systems
- Video Educational Systems

- Microwave Transmission Systems
- CATV and CCTV

E. Security Systems

- Perimeter Security Systems
- Vibration Sensor Systems
- Sonar/Infrared Monitoring Equipment
- Access Control Systems
- Card Access Systems

\*Fire Alarm Systems

1. Fire Alarms-In Raceways
  - a. Wire and cable pulling, in raceways, performed at the current electrician wage rate and fringe benefits.
  - b. Installation and termination of devices, panels, startup, testing and programming performed by the technician.
2. Fire Alarms-Open Wire Systems
  - a. Open wire systems installed by the technician.

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ELEC0112B 12/01/2000		
	Rates	Fringes
KITTITAS COUNTY		
ELECTRICIANS	27.75	3%+6.93
CABLE SPLICERS	29.14	3%+6.93

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ELEC0112G 06/01/2000		
	Rates	Fringes
KITTTITAS COUNTY		
COMMUNICATION & SOUND		
TECHNICIANS	19.00	4.80

#### SCOPE OF WORK

The work covered shall include the installation, testing, service and maintenance, of the following systems that utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for TV monitoring and surveillance, background foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems

- SCADA (Supervisory control/data acquisition
- PCM (Pulse code modulation)
- Inventory control systems
- Digital data systems

- Broadband & baseband and carriers
- Point of sale systems
- VSAT data systems
- Data communication systems
- RF and remote control systems
- Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems

- Background-Foreground Music
- Intercom and Telephone Interconnect Systems
- Sound and Musical Entertainment Systems
- Nurse Call Systems
- Radio Page Systems
- School Intercom and Sound Systems
- Burglar Alarm Systems
- Low-Voltage Master Clock Systems
- Multi-Media/Multiplex Systems
- Telephone Systems
- RF Systems and Antennas and Wave Guide

C. \*Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems

- Television Monitoring and Surveillance Systems
- Video Security Systems
- Video Entertainment Systems
- Video Educational Systems

Microwave Transmission Systems  
CATV and CCTV

E. Security Systems

Perimeter Security Systems  
Vibration Sensor Systems  
Sonar/Infrared Monitoring Equipment  
Access Control Systems  
Card Access Systems

\*Fire Alarm Systems

1. Fire Alarms-In Raceways
  - a. Wire and cable pulling, in raceways, performed at the current electrician wage rate and fringe benefits.
  - b. Installation and termination of devices, panels, startup, testing and programing performed by the technician.
2. Fire Alarms-Open Wire Systems
  - a. Open wire systems installed by the technician.

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ELEC0191A 08/31/2001		
	Rates	Fringes
CHELAN COUNTY		
ELECTRICIANS	26.66	3%+8.03
CABLE SPLICERS	29.33	3%+8.03

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ELEC0191E 10/01/2001		
	Rates	Fringes
CHELAN AND SNOHOMISH COUNTIES		
SOUND AND COMMUNICATIONS		
TECHNICIANS	20.50	4.82

SCOPE OF WORK

The work covered shall include the installation, testing, service and maintenance, of the following systems that utilize the transmission and/or transference of voice, sound, vision and digital for commercial, education, security and entertainment purposes for TV monitoring and surveillance, background foreground music, intercom and telephone interconnect, inventory control systems, microwave transmission, multi-media, multiplex, nurse call system, radio page, school intercom and sound, burglar alarms and low voltage master clock systems.

A. Communication systems that transmit or receive information and/or control systems that are intrinsic to the above listed systems

SCADA (Supervisory control/data acquisition  
PCM (Pulse code modulation)  
Inventory control systems  
Digital data systems  
Broadband & baseband and carriers

- Point of sale systems
- VSAT data systems
- Data communication systems
- RF and remote control systems
- Fiber optic data systems

B. Sound and Voice Transmission/Transference Systems

- Background-Foreground Music
- Intercom and Telephone Interconnect Systems
- Sound and Musical Entertainment Systems
- Nurse Call Systems
- Radio Page Systems
- School Intercom and Sound Systems
- Burglar Alarm Systems
- Low-Voltage Master Clock Systems
- Multi-Media/Multiplex Systems
- Telephone Systems
- RF Systems and Antennas and Wave Guide

C. \*Fire Alarm Systems-installation, wire pulling and testing.

D. Television and Video Systems

- Television Monitoring and Surveillance Systems
- Video Security Systems
- Video Entertainment Systems
- Video Educational Systems
- Microwave Transmission Systems

CATV and CCTV

E. Security Systems

- Perimeter Security Systems
- Vibration Sensor Systems
- Sonar/Infrared Monitoring Equipment
- Access Control Systems
- Card Access Systems

\*Fire Alarm Systems

1. Fire Alarms-In Raceways
  - a. Wire and cable pulling, in raceways, performed at the current electrician wage rate and fringe benefits.
  - b. Installation and termination of devices, panels, startup, testing and programming performed by the technician.
2. Fire Alarms-Open Wire Systems
  - a. Open wire systems installed by the technician.

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ELEC0191L 08/31/2000		
	Rates	Fringes
SNOHOMISH COUNTY		
ELECTRICIANS	28.21	3%+7.23
CABLE SPLICERS	31.03	3%+7.23

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ELEV0019B 10/30/2001

	Rates	Fringes
CHELAN, CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, KITTTITAS, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		

ELEVATOR MECHANICS	24.925	7.455+a
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FOOTNOTE a: Vacation Pay: 8% with 5 or more years of service, 6%  
for 6 months to 5 years service. Paid Holidays: New Years Day,  
Memorial Day, Independence Day, Labor Day, Thanksgiving Day and  
Friday after, and Christmas Day.

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\* ELEV0023B 04/01/2002

	Rates	Fringes
PACIFIC COUNTY		

ELEVATOR MECHANIC	32.735	7.455+a
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FOOTNOTE a: Vacation Pay: 8% with 5 or more years of service, 6%  
for 6 months to 5 years service. Paid Holidays: Memorial Day,  
Independence Day, Labor Day, Thanksgiving Day and Friday after,  
and Christmas Day, and New Years Day.

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ENGI0302B 06/01/2001

	Rates	Fringes
CHELAN (WEST OF THE 120TH MERIDIAN), CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, KITTTITAS, MASON AND SNOHOMISH COUNTIES		

ON PROJECTS DESCRIBED IN FOOTNOTE A BELOW, THE RATE FOR EACH  
GROUP SHALL BE 95% OF THE BASE RATE PLUS FULL FRINGE BENEFITS.  
ON ALL OTHER WORK, THE FOLLOWING RATES APPLY.

POWER EQUIPMENT OPERATORS:

Zone 1 (0-25 radius miles):

GROUP 1AAA	29.61	8.38
GROUP 1AA	29.11	8.38
GROUP 1A	28.61	8.38
GROUP 1	28.11	8.38
GROUP 2	27.67	8.38
GROUP 3	27.31	8.38
GROUP 4	25.21	8.38

Zone Differential (Add to Zone 1 rates):

Zone 2 (26-45 radius miles) - \$ .70

Zone 3 (Over 45 radius miles) - \$1.00

BASEPOINTS: Aberdeen, Bellingham, Bremerton, Everett,  
Kent, Mount Vernon, Port Angeles, Port Townsend, Seattle,  
Shelton, Wenatchee, Yakima

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1AAA - Cranes-over 300 tons, or 300 ft of boom (including  
jib with attachments)

GROUP 1AA - Cranes 200 to 300 tons, or 250 ft of boom (including jib with attachments); Tower crane over 175 ft in height, base to boom

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft in height base to boom; Loaders-overhead, 8 yards and over; Shovels, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons, under 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Derricks on building work; Excavator, shovel, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader-overhead 6 yards to, but not including 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9, HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self propelled 45 yards and over; Slipform pavers; Transporters, all truck or track type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-Concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with attachments; Crane-overhead, bridge type-20 tons through 44 tons; Chipper; Concrete Pump-truck mount with boom attachment; Crusher; Deck Engineer/Deck Winches (power); Drilling machine; Excavator,

shovel, backhoe-3 yards and under; Finishing Machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Horizontal/directional drill operator; Loaders-overhead under 6 yards; Loaders-plant feed; Locomotives-all; Mechanics-all; Mixers-asphalt plant; Motor patrol graders-finishing; Piledriver (other than crane mount); Roto-mill, roto-grinder; Screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrade trimmer; Tractors, backhoes-over 75 hp; Transfer material service machine-shuttle buggy, blaw knox-roadtec; Truck crane oiler/driver-100 tons and over; Truck Mount portable conveyor; Yo Yo Pay dozer

GROUP 3 - Conveyors; Cranes-thru 19 tons with attachments; A-frame crane over 10 tons; Drill oilers-auger type, truck or crane mount; Dozers-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loader-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler-asphalt, crusher; Pumps-concrete; Roller, plant mix or multi-lift materials; Saws-concrete; Scrapers-concrete and carry-all; Service engineer-equipment; Trenching machines; Truck Crane Oiler/Driver under 100 tons; Tractors, backhoe 75 hp and under

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete finish machine-laser screed; Cranes-A frame-10 tons and under; Elevator and Manlift-permanent or shaft type;



Gradechecker, Stakehop; Forklifts under 3000 lbs. with attachments; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger, mechanical; Power plant; Pumps, water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

FOOTNOTE A- Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and bridges whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.
2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.
3. Marine projects (docks, wharfs, etc.) less than \$150,000.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not

outfitted with protective clothing

H-2 Class "C" Suit - Base wage rate plus \$ .25 per hour.

H-3 Class "B" Suit - Base wage rate plus \$ .50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$ .75 per hour.

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ENGI0370I 06/01/2000

	Rates	Fringes
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CHELAN (EAST OF THE 120TH MERIDIAN) COUNTY

ZONE 1:

POWER EQUIPMENT OPERATORS:

GROUP 1A	20.18	5.77
GROUP 1	20.74	5.77
GROUP 2	21.06	5.77
GROUP 3	21.67	5.77
GROUP 4	21.83	5.77
GROUP 5	21.99	5.77
GROUP 6	22.27	5.77
GROUP 7	22.54	5.77
GROUP 8	23.64	5.77

ZONE DIFFERENTIAL (Add to Zone 1  
rate): Zone 2 - \$2.00

Zone 1: Within 45 mile radius of Spokane, Moses Lake, Pasco,  
Washington; Lewiston, Idaho

Zone 2: Outside 45 mile radius of Spokane, Moses Lake, Pasco,  
Washington; Lewiston, Idaho

## POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1A: Boat Operator; Crush Feeder; Oiler; Steam Cleaner

GROUP 1: Bit Grinders; Bolt Threading Machine; Compressors (under 2000 CFM, gas, diesel, or electric power); Deck Hand; Drillers Helper (assist driller in making drill rod connections, service drill engine and air compressor, repair drill rig and drill tools; drive drill support truck to and on the job site, remove drill cuttings from around bore hole and inspect drill rig while in operation); Fireman & Heat Tender; Grade Checker; Hydro-seeder, Mulcher, Nozzleman; Oiler Driver, & Cable Tender, Mucking Machine; Pumpman; Rollers, all types on subgrade, including seal and chip coatings (farm type, Case, John Deere & similar, or Compacting Vibrator), except when pulled by Dozer with operable blade; Welding Machine

GROUP 2: A-frame Truck (single drum); Assistant Refrigeration Plant (under 1000 ton); Assistant Plant Operator, Fireman or Pugmixer (asphalt); Bagley or Stationary Scraper; Belt Finishing Machine; Blower Operator (cement); Cement Hog; Compressor (2000 CFM or over, 2 or more, gas diesel or electric power); Concrete Saw (multiple cut); Distributor Leverman; Ditch Witch or similar; Elevator Hoisting Materials; Dope Pots (power agitated); Fork Lift or Lumber Stacker, hydra-lift & similar; Gin Trucks

(pipeline); Hoist, single drum; Loaders (bucket elevators and conveyors); Longitudinal Float; Mixer (portable-concrete); Pavement Breaker, Hydra-Hammer & similar; Power Broom; Railroad Ballast Regulation Operator (self-propelled); Railroad Power Tamper Operator (self-propelled); Railroad Tamper Jack Operator (self-propelled); Spray Curing Machine (concrete); Spreader Box (self-propelled); Straddle Buggy (Ross & similar on construction job only); Tractor (Farm type R/T with attachment, except Backhoe); Tugger Operator

GROUP 3: A-frame Truck (2 or more drums); Assistant Refrigeration Plant & Chiller Operator (over 1000 ton); Backfillers (Cleveland & similar); Batch Plant & Wet Mix Operator, single unit (concrete); Belt-Crete Conveyors with power pack or similar; Belt Loader (Kocal or similar); Bending Machine; Bob Cat; Boring Machine (earth); Boring Machine (rock under 8" bit) (Quarry Master, Joy or similar); Bump Cutter (Wayne, Saginaw or similar); Canal Lining Machine (concrete); Chipper (without crane); Cleaning & Doping Machine (pipeline); Deck Engineer; Elevating Belt-type Loader (Euclid, Barber Green & similar); Elevating Grader-type Loader (Dumor, Adams or similar); Generator Plant Engineers (diesel or electric); Gunnite Combination Mixer & Compressor; Locomotive Engineer; Mixermobile; Mucking Machine; Posthole Auger or Punch; Pump (grout or jet); Soil Stabilizer (P & H or similar); Spreader Machine; Tractor (to D-6 or equivalent) and Traxcavator; Traverse Finish Machine; Turnhead Operator

GROUP 4: Concrete Pumps (squeeze-crete, flow-crete, pump-crete, Whitman & similar); Curb Extruder (asphalt or concrete); Drills (churn, core, calyx or diamond) (Operate drilling machine, drive or transport drill rig to and on job site and weld well casing);

Equipment Serviceman, Greaser & Oiler; Hoist (2 or more drums or Tower Hoist); Loaders (overhead & front-end, under 4 yds. R/T); Refrigeration Plant Engineer (under 1000 ton); Rubber-tired Skidders (R/T with or without attachments); Surface Heater & Planer Machine; Trenching Machines (under 7 ft. depth capacity); Turnhead (with re-screening); Vacuum Drill (reverse circulation drill under 8" bit)

GROUP 5: Backhoe (under 45,000 gw); Backhoe and Hoe Ram (under 3/4 yd.); Carrydeck & boom truck (under 25 tons); Cranes (25 tons & under), all attachments including clamshell, dragline; Derricks & Stifflegs (under 65 tons); Drilling Equipment (8" bit & over) (Robbins, reverse circulation & similar) (operates drill machine, drive or transport drill rig to and on job site and weld well casing); Hoe Ram; Piledriving Engineers; Paving (dual drum); Railroad Track Liner Operator (self-propelled); Refrigeration Plant Engineer (1000 tons & over); Signalman (Whirleys, Highline Hammerheads or similar)

GROUP 6: Asphalt Plant Operator; Automatic Subgrader (Ditches & Trimmers) (Autograde, ABC, R.A. Hansen & similar on grade wire); Backhoe (45,000 gw and over to 110,000 gw); Backhoes & Hoe Ram (3/4 yd. to 3 yd.); Batch Plant (over 4 units); Batch & Wet Mix Operator (multiple units, 2 & incl. 4); Blade Operator (Motor Patrol & Attachments, Athey & Huber); Boom Cats (side); Cableway

Controller (dispatcher); Clamshell Operator (under 3 yds.); Compactor (self-propelled with blade); Concrete Pump Boom Truck; Concrete Slip Form Paver; Cranes (over 25 tons including 45 tons), all attachments including clamshell, dragline; Crusher, Grizzle & Screening Plant Operator; Dozer, 834 R/T & similar; Draglines (under 3 yds.); Drill Doctor; H.D. Mechanic; H.D. Welder; Loader Operator (front-end & overhead, 4 yds. incl. 8 yds.); Multiple Dozer Units with single blade; Paving Machine (asphalt and concrete); Quad-Track or similar equipment; Rollerman (finishing asphalt pavement); Roto Mill (pavement grinder); Scrapers, all rubber-tired; Screed Operator; Shovel (under 3 yds.); Tractors (D-6 & equivalent & over); Trenching Machines (7 ft. depth & over); Tug Boat Operator; Vactor Guzzler, super sucker

GROUP 7: Backhoe (over 110,000 gw); Backhoes & Hoe Ram (3 yds. & over); Blade (finish & bluetop), Automatic, CMI, ABC, Finish Athey & Huber & similar when used as automatic; Cableway Operators; Clamshell Operator (3 yds. & over); Cranes (over 45 tons to but not including 85 tons), all attachments including clamshell and dragline; Derricks & Stifflegs (65 tons & over); Draglines (3 yds. & over); Elevating Belt (Holland type); Heavy Equipment Robotics Operator; Loader (360 degrees revolving Koehring Scooper or similar); Loaders (overhead & front-end, over 8 yds. to 10 yds.); Rubber-tired Scrapers (multiple engine with three or more scrapers); Shovels (3 yds. & over); Ultra High Pressure Waterjet Cutting Tool System Operator (30,000 psi); Vacuum Blasting Machine Operator; Whirleys & Hammerheads, ALL

GROUP 8: Cranes (85 tons and over, and all climbing, overhead,

rail and tower); Loaders (overhead and front-end, 10 yards and over); Helicopter Pilot

BOOM PAY: (All Cranes, Including Tower)  
180' to 250' \$.30 over scale  
Over 250' \$.60 over scale

NOTE: In computing the length of the boom on Tower Cranes, they shall be measured from the base of the tower to the point of the boom.

HAZMAT: Anyone working on HAZMAT jobs, working with supplied air shall receive \$1.00 an hour above classification.

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ENGI0612B 06/01/2001

Rates Fringes  
LEWIS, PIERCE, PACIFIC (portion lying north of a parallel line extending west from the northern boundary of Wahkaikum County to the sea) AND THURSTON COUNTIES

ON PROJECTS DESCRIBED IN FOOTNOTE A BELOW, THE RATE FOR EACH GROUP SHALL BE 90% OF THE BASE RATE PLUS FULL FRINGE BENEFITS. ON ALL OTHER WORK, THE FOLLOWING RATES APPLY.

POWER EQUIPMENT OPERATORS:

Zone 1 (0-25 radius miles):

GROUP 1AAA	29.16	8.38
GROUP 1AA	29.11	8.38
GROUP 1A	28.61	8.38
GROUP 1	28.11	8.38
GROUP 2	27.67	8.38
GROUP 3	27.31	8.38
GROUP 4	25.21	8.38

Zone Differential (Add to Zone 1 rates):

Zone 2 (26-45 radius miles) = \$ .70

Zone 3 (Over 45 radius miles) - \$1.00

BASEPOINTS: CENTRALIA, OLYMPIA, TACOMA

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1 AAA - Cranes-over 300 tons or 300 ft of boom (including jib with attachments)

GROUP 1AA - Cranes- 200 tonsto 300 tons, or 250 ft of boom (including jib with attachments; Tower crane over 175 ft in height, bas to boom

GROUP 1A - Cranes, 100 tons thru 199 tons, or 150 ft of boom (including jib with attachments); Crane-overhead, bridge type, 100 tons and over; Tower crane up to 175 ft in height base to boom; Loaders-overhead, 8 yards and over; Shovels, excavator, backhoes-6 yards and over with attachments

GROUP 1 - Cableway; Cranes 45 tons thru 99 tons under 150 ft of

boom (including jib with attachments); Crane-overhead, bridge type, 45 tons thru 99 tons; Derricks on building work; Excavator, shovel, backhoes over 3 yards and under 6 yards; Hard tail end dump articulating off-road equipment 45 yards and over; Loader-overhead, 6 yards to, but not including, 8 yards; Mucking machine, mole, tunnel, drill and/or shield; Quad 9 HD 41, D-10; Remote control operator on rubber tired earth moving equipment; Rollagon; Scrapers-self-propelled 45 yards and over; Slipform pavers; Transporters, all track or truck type

GROUP 2 - Barrier machine (zipper); Batch Plant Operator-concrete; Bump Cutter; Cranes, 20 tons thru 44 tons with attachments; Crane-Overhead, bridge type, 20 tons through 44 tons; Chipper; Concrete pump-truck mount with boom attachment; Crusher; Deck engineer/deck winches (power); Drilling machine; Excavator, shovel, backhoe-3 yards and under; Finishing machine, Bidwell, Gamaco and similar equipment; Guardrail punch; Loaders, overhead under 6 yards; Loaders-plant feed; Locomotives-all; Mechanics- all; Mixers, asphalt plant; Motor patrol graders, finishing; Piledriver (other than crane mount); Roto-mill, roto-grinder; Screedman, spreader, topside operator-Blaw Knox, Cedar Rapids, Jaeger, Caterpillar, Barbar Green; Scraper-self-propelled, hard tail end dump, articulating off-road equipment-under 45 yards; Subgrader trimmer; Tractors, backhoe over 75

hp; Transfer material service machine-shuttle buggy, Blaw Knox-Roadtec; Truck Crane oiler/driver-100 tons and over; Truck Mount Portable Conveyor; Yo Yo pay

GROUP 3 - Conveyors; Cranes through 19 tons with attachments; Crane-A-frame over 10 tons; Drill oilers-auger type, truck or crane mount; Dozer-D-9 and under; Forklift-3000 lbs. and over with attachments; Horizontal/directional drill locator; Outside Hoists-(elevators and manlifts), air tuggers, strato tower bucket elevators; Hydralifts/boom trucks over 10 tons; Loaders-elevating type, belt; Motor patrol grader-nonfinishing; Plant oiler-asphalt, crusher; Pump-Concrete; Roller, plant mix or multi-lfit materials; Saws-concrete; Scrapers, concrete and carry all; Service engineers-equipment; Trenching machines; Truck crane oiler/driver under 100 tons; Tractors, backhoe under 75 hp

GROUP 4 - Assistant Engineer; Bobcat; Brooms; Compressor; Concrete Finish Machine-laser screed; Cranes A-frame 10 tons and under; Elevator and manlift (permanent and shaft type); Forklifts-under 3000 lbs. with attachments; Gradechecker, stakehop; Hydralifts/boom trucks, 10 tons and under; Oil distributors, blower distribution and mulch seeding operator; Pavement breaker; Posthole digger-mechanical; Power plant; Pumps-water; Rigger and Bellman; Roller-other than plant mix; Wheel Tractors, farmall type; Shotcrete/gunite equipment operator

FOOTNOTE A- Reduced rates may be paid on the following:

1. Projects involving work on structures such as buildings and bridges whose total value is less than \$1.5 million excluding mechanical, electrical, and utility portions of the contract.

2. Projects of less than \$1 million where no building is involved. Surfacing and paving included, but utilities excluded.

3. Marine projects (docks, wharfs, etc.) less than \$150,000.

HANDLING OF HAZARDOUS WASTE MATERIALS: Personnel in all craft classifications subject to working inside a federally designated hazardous perimeter shall be eligible for compensation in accordance with the following group schedule relative to the level of hazardous waste as outlined in the specific hazardous waste project site safety plan.

H-1 Base wage rate when on a hazardous waste site when not outfitted with protective clothing

H-2 Class "C" Suit - Base wage rate plus \$ .25 per hour.

H-3 Class "B" Suit - Base wage rate plus \$ .50 per hour.

H-4 Class "A" Suit - Base wage rate plus \$ .75 per hour.

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IRON0086A 07/01/2001		
	Rates	Fringes
IRONWORKERS	25.82	11.35

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LABO0001I 06/01/2001		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
LABORERS:		
ZONE 1:		
GROUP 1	14.46	5.80
GROUP 2	16.78	5.80
GROUP 3	18.50	5.80
GROUP 4	18.98	5.80
GROUP 5	19.34	5.80

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$ .70

ZONE 3 - \$1.00

BASE POINTS: CHELAN, SUNNYSIDE, WENATCHEE,  
AND YAKIMA

ZONE 1 - Projects within 25 radius miles of the respective city hall

ZONE 2 - More than 25 but less than 45 radius miles from the respective city hall

ZONE 3 - More than 45 radius miles from the respective city hall

CALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary of Wahkiakum County west to the Pacific Ocean), PIERCE, SNOHOMISH AND THURSTON COUNTIES

LABORERS:

ZONE 1:

GROUP 1	16.92	5.80
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GROUP 2	19.24	5.80
GROUP 3	23.92	5.80
GROUP 4	24.40	5.80
GROUP 5	24.76	5.80

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$ .70

ZONE 3 - \$1.00

BASE POINTS: BELLINGHAM, MT. VERNON, EVERETT,  
SEATTLE, KENT, TACOMA, OLYMPIA,  
CENTRALIA, ABERDEEN, SHELTON, PT.  
TOWNSEND, PT. ANGELES, AND BREMERTON

ZONE 1 - Projects within 25 radius miles of the respective city hall

ZONE 2 - More than 25 but less than 45 radius miles from the respective city hall

ZONE 3 - More than 45 radius miles from the respective city hall

LABORERS CLASSIFICATIONS

GROUP 1: Landscaping and Planting; Watchman; Window Washer/Cleaner (detail clean-up, such as but not limited to cleaning floors, ceilings, walls, windows, etc., prior to final acceptance by the owner)

GROUP 2: Batch Weighman; Crusher Feeder; Fence Laborer; Flagman; Pilot Car

GROUP 3: General Laborer; Air, Gas, or Electric Vibrating Screed; Asbestos Abatement Laborer; Ballast Regulator Machine; Brush Cutter; Brush Hog Feeder; Burner; Carpenter Tender; Cement Finisher Tender; Change House or Dry Shack; Chipping Gun (under 30 lbs.); Choker Setter; Chuck Tender; Clean-up Laborer; Concrete Form Stripper; Curing Laborer; Demolition (wrecking and moving including charred material); Ditch Digger; Dump Person; Fine Graders; Firewatch; Form Setter; Gabian Basket Builders; Grout Machine Tender; Grinders; Guardrail Erector; Hazardous Waste Worker (Level C); Maintenance Person; Material Yard Person; Pot Tender; Rip Rap Person; Riggers; Scale Person; Sloper Sprayer; Signal Person; Stock Piler; Stake Hopper; Toolroom Man (at job site); Topper-Tailer; Track Laborer; Truck Spotter; Vinyl Seamer

GROUP 4: Cement Dumper-Paving; Chipping Gun (over 30 lbs.); Clary Power Spreader; Concrete Dumper/Chute Operator; Concrete Saw Operator; Drill Operator (hydraulic, diamond, aiartrac); Faller and Bucker Chain Saw; Grade Checker and Transit Person; Groutmen (pressure) including post tension beams; Hazardous Waste Worker (Level B); High Scaler; Jackhammer; Laserbeam Operator; Manhole Builder-Mudman; Mortarman and Hodcarrier; Nozzleman (concrete pump, green cutter when using combination of high pressure air and water on concrete and rock, sandblast, gunite, shotcrete, water blaster, vacuum blaster); Pavement Breaker; Pipe Layer and Caulker; Pipe Pot Tender; Pipe Reliner (not insert type); Pipe Wrapper; Power Jacks; Railroad Spike Puller-Power; Raker-Asphalt; Rivet Buster; Rodder; Sloper (over 20'); Spreader (concrete); Tamper and Similar electric, air and glas operated

tool; Timber Person-sewer (lagger shorer and cribber);  
Track Liner Power; Tugger Operator; Vibrator; Well Point Laborer

GROUP 5: Caisson Worker; Miner; Powderman; Re-Timberman;  
Hazardous Waste Worker (Level A).

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LABO0238I 06/01/2001  

	Rates	Fringes
CHELAN COUNTY		
HOD CARRIERS	21.35	5.00

  
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LABO0335C 06/01/2001  

	Rates	Fringes
PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean) COUNTY		

ZONE 1:

LABORERS:

GROUP 1	22.27	6.75
GROUP 2	22.77	6.75
GROUP 3	23.15	6.75
GROUP 4	23.47	6.75
GROUP 5	20.12	6.75
GROUP 6	18.06	6.75
GROUP 7	15.36	6.75

LABORERS CLASSIFICATIONS

GROUP 1: Asphalt Plant Laborers; Asphalt Spreaders;  
Batch Weighman; Broomers; Brush Burners and Cutters; Car and  
Truck Loaders; Carpenter Tender; Change-House Man or Dry Shack  
Man; Choker Setter; Clean-up Laborers; Curing-concrete;  
Demolition, Wrecking, and Moving Laborers; Dumpers,  
road oiling crew; Dumpmen (for grading crew); Elevator Feeders;  
Guard Rail, Median Rail, Reference Post, Guide Post, Right-of-way  
Marker; Fine Graders; Fire Watch; Form Strippers (not swinging  
stages); General Laborers; Hazardous Waste Worker; Leverman or  
Aggregate Spreader (Flaherty and similar types); Loading  
Spotters; Material Yard Man (including electrical); Pittsburgh  
Chipper Operator or similar types; Railroad Track Laborers;  
Ribbon Setters (including steel forms); Rip Rap Man (hand  
placed); Road Pump Tender; Sewer Laborer; Signalman; Skipman;  
Slopers; Spraymen; Stake Chaser; Stockpiler; Tie Back Shoring;  
Timber Faller and Bucker (hand labor); Toolroom Man (at job  
site); Tunnel Bullgang (above ground); Weight-Man-Crusher  
(aggregate when used)

GROUP 2: Applicator (including pot power tender for same),  
applying protective material by hand or nozzle on utility lines  
or storage tanks on project; Brush (power saw); Burners;  
Choker Splicer; Clary Power Spreader and similar types;  
Clean up-nozzleman-Green cutter (concrete, rock, etc.); Concrete



Laborer; Concrete Power Buggyman; Crusher Feeder; Demolition and Wrecking Charred Materials; Guniting Nozzleman Tender; Guniting or Sand Blasting Pot Tender; Handlers or Mixers of all Materials of an irritating nature (including cement and lime); Pipe Doping & Wrapping; Tool Operators (includes but not limited to: Dry pack machine, Jackhammer, Chipping guns, Paving breakers); Post Hole Digger, air, gas or electric; Vibrating Screed; Tampers; Sand Blasting (wet); Stake-Setter; Tunnel-Muckers, Brakemen, Concrete Crew, Bull gang (Underground)

GROUP 3: Asbestos Removal (structural removal only); Bit Grinder; Drill Doctor; Drill Operators, air tracks cat drills, wagon drills, rubber-mounted drills, and other similar types; Concrete Saw Operator; Guniting Nozzleman; High scalers, strippers and drillers (covers work in swinging stages, chairs or belts, under extreme conditions unusual to normal drilling, blasting, barring-down, or sloping and stripping); Manhole Builder; Powdermen; Power Saw Operators (Bucking and Falling); Pumpcrete Nozzlemen; Sand Blasting (dry); Sewer Timberman; Track Liners;

Anchor Machines; Ballast Regulators; Multiple Tampers; Power Jacks; Tugger Operator; Tunnel-Chuck Tenders, Nippers and Timbersmen; Vibrator; Water Blaster

GROUP 4: Asphalt Raker; Concrete Saw Operator (walls); Concrete Nozzelman; Grade Checker; Pipelayer; Laser Beam (Tunnel) applicable when assigned to move, set up, align laser beam; Miner-Tunnel; Motorman-dinky Locomotive-Tunnel; Powderman-Tunnel; Shield Operator-Tunnel

GROUP 5: Traffic Flaggers

GROUP 6: Fence Builders

GROUP 7: Landscaping and Planting Laborers

ZONE DIFFERENTIAL (ADD TO ZONE 1 RATES):

ZONE 2 - \$0.65  
ZONE 3 - 1.15  
ZONE 4 - 1.70  
ZONE 5 - 2.75

#### ZONE DEFINITIONS

BASE POINTS: GOLDENDALE, LONGVIEW, AND VANCOUVER

ZONE 1: Projects within 30 miles of the respective city hall  
ZONE 2: More than 30 miles but less than 40 miles from the respective city hall.  
ZONE 3: More than 40 miles but less than 50 miles from the respective city hall.  
ZONE 4: More than 50 miles but less than 80 miles from the respective city hall.  
ZONE 5: More than 80 miles from the respective city hall.

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LABO0335K 06/01/2001		
	Rates	Fringes
PACIFIC(south of a straight line made by extending the north boundary of Wahkiakum County west to the Pacific Ocean)		
HOD CARRIERS	24.64	5.75
-----		
PAIN0005A 03/01/2000		
	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
PAINTERS	22.94	3.73
-----		
PAIN0005C 06/10/2000		
	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
DRYWALL FINSIHERS	25.50	7.82
-----		
PAIN0005H 07/01/2001		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
PAINTERS:		
BRUSH, PAPERHANGER,		
STEAM-CLEANING, STRIPING and		
SPRAY	19.17	4.24
TV, RADIO, ELECTRICAL		
TRANSMISSION TOWERS	20.92	4.24
-----		
PAIN0005P 06/01/2001		
	Rates	Fringes
CALLAM, GRAYS HARBOR, JEFFERSON, LEWIS, MASON, PACIFIC (NORTHERN PORTION), PIERCE AND THURSTON COUNTIES		
SOFT FLOOR LAYERS	21.77	6.63
-----		
PAIN0054G 09/01/2001		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
GLAZIERS	17.32	3.17
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PAIN0054I 06/01/1999		
	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		
DRYWALL FINISHER (TAPER)	19.98	4.25

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PAIN0055M  01/01/2000
                                     Rates      Fringes
PACIFIC COUNTY
DRYWALL FINISHERS                    24.00      7.60
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PAIN0055N  11/01/1999
                                     Rates      Fringes
PACIFIC COUNTY
PAINTERS:
Brush & Roller                      17.10      3.48
Spray and Sandblasting              17.70      3.48
High work - All work
60 ft. or higher                    17.60      3.48
-----

PAIN0188A  01/01/2002
                                     Rates      Fringes
CLALLAM, JEFFERSON, KING, KITSAP, LEWIS, MASON, PIERCE, SNOHOMISH
AND THURSTON COUNTIES
GLAZIERS                            29.23      6.73
-----

PAIN0188B  07/01/2001
                                     Rates      Fringes
GRAYS HARBOR AND PACIFIC COUNTIES
GLAZIERS                            14.58      4.69
-----

PAIN1238D  06/01/2001
                                     Rates      Fringes
KING, KITSAP AND SNOHOMISH COUNTIES
SOFT FLOOR LAYERS                   23.69      6.91
-----

PLAS0072C  06/01/1999
                                     Rates      Fringes
CHELAN AND KITTITAS COUNTIES
Zone 1:
CEMENT MASONS                      20.75      5.24
Zone Differential (Add to Zone 1
rates):  Zone 2 - $2.00

BASE POINTS:  Spokane, Pasco, Moses Lake, and Lewiston

Zone 1:  0 - 45 radius miles from the main post office
Zone 2:  45 radius miles from the main post office

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PLAS0082D 06/01/1999

	Rates	Fringes
PACIFIC (South of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean) COUNTY		

PLASTERERS	23.91	6.36
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PLAS0528B 12/01/2001

	Rates	Fringes
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum Count, west to the Pacific Ocean), PIERCE, SNOHOMISH AND THURSTON COUNTIES		

CEMENT MASONS	27.16	8.99
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PLUM0032A 06/01/1999

	Rates	Fringes
CHELAN AND KITTITAS (NORTHERN TIP) COUNTIES		

PLUMBERS AND PIPEFITTERS	23.47	8.67
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PLUM0032B 01/01/2002

	Rates	Fringes
CLALLAM, KING AND JEFFERSON COUNTIES		

PLUMBERS AND PIPEFITTERS	32.08	11.53
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PLUM0082D 06/01/2001

	Rates	Fringes
GRAYS HARBOR, LEWIS, MASON (EXCLUDING NE SECTION), PACIFIC, PIERCE AND THURSTON COUNTIES		

PLUMBERS AND PIPEFITTERS	24.57	14.72
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PLUM0265A 06/01/2001

	Rates	Fringes
SNOHOMISH COUNTY		

PLUMBERS AND PIPEFITTERS:	28.37	10.24
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PLUM0598B 06/01/2001

	Rates	Fringes
KITTITAS (ALL BUT NORTHERN TIP)		

PLUMBERS AND PIPEFITTERS	28.85	11.55
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PLUM0631A 06/01/2001		
	Rates	Fringes
MASON (NE SECTION), AND KITSAP COUNTIES		

PLUMBERS/PIPEFITTERS:  
All new construction, additions,  
and remodeling of commercial  
building projects such as:  
cocktail lounges and taverns,  
professional buildings, medical  
clinics, retail stores, hotels  
and motels, restaurants and fast  
food types, gasoline service

stations, and car washes where the plumbing and mechanical cost of the project is less than \$100,000	14.55	7.98
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All other work where the plumbing and mechanical cost of the project is \$100,000 and over	24.65	13.41
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ROOF0054A 10/01/2001		
	Rates	Fringes
CLALLAM, JEFFERSON, KING, KITSAP, MASON AND SNOHOMISH COUNTIES		
ROOFERS	25.12	7.41

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ROOF0153A 01/01/2002		
	Rates	Fringes
GRAYS HARBOR, LEWIS, PACIFIC, PIERCE AND THURSTON COUNTIES		
ROOFERS	23.60	5.84

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ROOF0189A 07/01/2001		
	Rates	Fringes
CHELAN COUNTY		
ROOFERS	19.05	6.05

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ROOF0189E 07/01/2001		
	Rates	Fringes
KITTITAS COUNTY		
ROOFERS	17.48	5.60

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SFWA0699B 07/01/2001

	Rates	Fringes
KING, KITSAP, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
SPRINKLER FITTERS	31.48	10.95

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	Rates	Fringes
SHEE0066D 06/01/2000		
CHELAN COUNTY		
SHEET METAL WORKERS	23.77	6.48

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WA020002 - 1

	Rates	Fringes
SHEE0066F 06/01/2001		
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC, PIERCE, SNOHOMISH AND THURSTON COUNTIES		
SHEET METAL WORKERS	29.98	9.67

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	Rates	Fringes
SHEE0066M 06/01/2000		
KITTITAS COUNTY		
SHEET METAL WORKERS	25.43	7.30

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	Rates	Fringes
TEAM0174B 06/01/2001		
CLALLAM, GRAYS HARBOR, JEFFERSON, KING, KITSAP, LEWIS, MASON, PACIFIC (North of a straight line made by extending the north boundary line of Wahkiakum County west to the Pacific Ocean), PIERCE, SNOHOMISH AND THURSTON COUNTIES		

TRUCK DRIVERS:

GROUP 1:	24.94	9.12
GROUP 2:	24.36	9.12
GROUP 3:	22.08	9.12
GROUP 4:	18.00	9.12
GROUP 5:	24.70	9.12

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 -"A-frame or Hydralift" trucks and Boom trucks or similar equipment when "A" frame or "Hydralift" and Boom truck or similar equipment is used; Buggymobile; Bulk Cement Tanker; Dumpsters and similar equipment, Tournorockers, Tournowagon, Tournotrailer, Cat DW series, Terra Cobra, Le Tourneau, Westinghouse, Athye Wagon, Eucid Two and Four-Wheeled power tractor with trailer and similar top-loaded equipment transporting material: Dump Trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with 16 yards to 30 yards capacity: Over 30 yards \$.15 per hour additional for each 10 yard increment; Explosive Truck (field

mix) and similar equipment; Hyster Operators (handling bulk loose aggregates); Lowbed and Heavy Duty Trailer; Road Oil Distributor Driver; Spreader, Flaherty Transit mix used exclusively in heavy construction; Water Wagon and Tank Truck-3,000 gallons and over capacity

GROUP 2 - Bulllifts, or similar equipment used in loading or unloading trucks, transporting materials on job site; Dumpsters, and similar equipment, Tournorockers, Tournowagon, Turnotrailer, Cat. D.W. Series, Terra Cobra, Le Tourneau, Westinghous, Athye wagon, Euclid two and four-wheeled power tractor with trailer and similar top-loaded equipment transporting material, Dump trucks, side, end and bottom dump, including semi-trucks and trains or combinations thereof with less than 16 yards capacity; Flatbed: (Dual Rear Axle); Grease Truck, Fuel Truck, Greaser, Battery Service Man and/or Tire Service Man; Leverman and loader at bunkers and batch plants; Oil tank transport; Scissor, Slurry

Truck; Sno-Go and similar equipment; Swampers; Straddler Carrier (Ross, Hyster) and similar equipment; Team Driver; Tractor (small rubber-tired (when used within Teamster jurisdiction); Vacuum truck; Water Wagon and Tank trucks-less than 3,000 gallons capacity; Winch truck; Wrecker, tow truck and similar equipment

GROUP 3 - Flatbed: single rear axle; Pickup sweeper, Pickup Truck (Adjust upward by \$2.00 per hour for onsite work)

GROUP 4 - Escort or pilot driver

GROUP 5 - Mechanic

#### HAZMAT PROJECTS

Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL C: +\$.25 per hour - This level uses an air purifying respirator or additional protective clothing.

LEVEL B: +\$.50 per hour - Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit."

LEVEL A: +\$.75 per hour - This level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

#### ZONE DIFFERENTIAL

Zone pay will be calculated from the city center of the following listed cities:

BELLINGHAM	CENTRALIA	RAYMOND	OLYMPIA
EVERETT	SHELTON	ANACORTES	BELLEVUE
SEATTLE	PORT ANGELES	MT. VERNON	KENT
TACOMA	PORT TOWNSEND	ABERDEEN	BREMERTON

Zone A - 0 - 25 miles - Free Zone  
Zone B - 25 - 45 miles - \$ .70 per hour  
Zone C - Over 45 miles - \$1.00 per hour

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TEAM0760F 06/01/2000

	Rates	Fringes
CHELAN AND KITTITAS COUNTIES		

(ANYONE WORKING ON HAZMAT  
JOBS SEE FOOTNOTE A BELOW)

TRUCK DRIVERS:

GROUP 1	19.33	7.50
GROUP 2	21.97	7.50
GROUP 3	22.08	7.50
GROUP 4	22.41	7.50
GROUP 5	22.52	7.50
GROUP 6	22.68	7.50
GROUP 7	23.22	7.50
GROUP 8	23.64	7.50

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Escort Driver or Pilot Car; Employee Haul; Power Boat  
Hauling Employees or Material

GROUP 2: Fish Truck; Flat Bed Truck; Fork Lift (3000 lbs. and  
under); Trailer Mounted Hydro Seeder and Mulcher; Leverperson  
(loading trucks at bunkers); Seeder & Mulcher; Stationary Fuel  
Operator; Tractor (small, rubber-tired, pulling trailer or  
similar equipment)

GROUP 3: Auto Crane (2000 lbs. capacity); Buggy Mobile &  
Similar; Bulk Cement Tanks & Spreader; Dumptor (6 yds. & under);  
Flat Bed Truck with Hydraulic System; Fork Lift (3001-16,000  
lbs.); Fuel Truck Driver; Steamcleaner & Washer; Power Operated  
Sweeper; Rubber-tired Tunnel Jumbo; Scissors Truck; Slurry Truck  
Driver; Straddle Carrier (Ross, Hyster, & similar); Tireperson;  
Transit Mixers & Truck Hauling Concrete (3 yd. to & including 6  
yds.); Trucks, side, end, bottom and articulated end dump (3  
yards to and including 6 yds.); Warehouseperson (to include  
shipping & receiving); Wrecker & Tow Truck

GROUP 4: A-Frame; Burner, Cutter, & Welder; Service Greaser;  
Trucks, side, end, bottom and articulated end dump (over 6 yds.  
to & including 12 yds.); Truck Mounted Hydro Seeder;  
Warehouseperson; Water Tank truck (0-8000 gallons)

GROUP 5: Dumpster (over 6 yds.); Lowboy (50 tons & under); Self-  
Loading Roll Off; Semi-Truck & Trailer; Tractor with Steer  
Trailer; Transit Mixers and Trucks Hauling Concrete (over 6 yds.  
to and including 10 yds.); Trucks, side, end, bottom and  
articulated end dump (over 12 yds. to & including 20 yds.);  
Truck-Mounted Crane (with load bearing surface either mounted or  
pulled) (up to 14 ton); Vacuum Truck (super sucker, guzzler, etc.)

GROUP 6: Flaherty Spreader Box Driver; Flowboys; Fork Lift



(over 16,000 lbs.); Dumps (Semi-end); Lowboy (over 50 tons); Mechanic (Field); Transfer Truck and Trailer; Transit Mixers & Trucks Hauling Concrete (over 10 yds. to & including 20 yds.); Trucks, side, end, bottom and end dump (over 20 yds. to & including 40 yds.); Truck and Pup; Tournarocker, DW's & similar with 2 or more 4 wheel-power tractor with trailer, gallonage or yardage scale, whichever is greater; Water Tank Truck (8,001-14,000 gallons)

GROUP 7: Oil Distributor Driver; Stringer Truck (cable operated trailer); Transit Mixers & Hauling Concrete (over 20 yds.); Truck, side, end, bottom and articulated end dump (over 40 yds. to & including 100 yds.); Truck Mounted Crane (with load bearing surface either mounted or pulled (16 through 25 tons)

GROUP 8: Prime Movers and Stinger Truck; Trucks, side, end, bottom and articulated end dump (over 100 yds.); Helicopter

Pilot Hauling Employees or Materials

Footnote A- Anyone working on a HAZMAT job, where HAZMAT certification is required, shall be compensated as a premium, in addition to the classification working in as follows:

LEVEL D: - \$.25 PER HOUR (This is the lowest level of protection.

No respirator is used and skin protection is minimal.

LEVEL C: - \$.50 PER HOUR (This level uses an air purifying respirator or additional protective clothing.

LEVEL B: - \$.75 PER HOUR (Uses same respirator protection as Level A. Supplied air line is provided in conjunction with a chemical "splash suit."

LEVEL A: - \$1.00 PER HOUR (this level utilizes a fully-encapsulated suit with a self-contained breathing apparatus or a supplied air line.

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.  
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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).  
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In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

\* an existing published wage determination

- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations  
Wage and Hour Division  
U. S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator  
U.S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board  
U. S. Department of Labor  
200 Constitution Avenue, N. W.  
Washington, D. C. 20210

4.) All decisions by the Administrative Review Board are final.  
END OF GENERAL DECISION

TABLE OF CONTENTS

TECHNICAL SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

GENERAL: The attached Division 1 Specifications have been prepared by the Government and specify administrative and procedural requirements applicable to this contract.

Section

<u>No.</u>	<u>Section Title</u>
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DIVISION 1 - GENERAL REQUIREMENTS

01001	Supplementary Requirements
01005	Site Specific Supplementary Requirements
01025	Payment
01035	Modification Procedures
01312	Quality Control System (QCS)
01320	Project Schedule
01330	Submittal Procedures
01410	Environmental Protection
01415	Metric Measurements
01451	Contractor Quality Control
01452	Special Inspection For Seismic-Resisting Systems
01501	Construction Facilities and Temporary Controls
01701	Operations and Maintenance Manuals
01702	As-Built Records and Drawings
01703	Warranty of Construction
01704	Form 1354 Checklist
01705	Equipment-In-Place List

DIVISION 15 - MECHANICAL

<u>15910</u>	<u>Direct Digital Control Systems</u>
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NOTE: THIS SECTION IS ADDED IN ITS ENTIRETY BY AMENDMENT 0003.
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## SECTION 15910

### DIRECT DIGITAL CONTROL SYSTEMS

#### PART 1 GENERAL

##### 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

#### AIR MOVEMENT AND CONTROL ASSOCIATION, INC. (AMCA)

AMCA 500 (1991) Louvers, Dampers and Shutters

#### AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C12.10 (1997) Electromechanical Watt-hour Meters

ANSI C57.13 (1978; R 1987) Instrument Transformers

#### AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR-CONDITIONING ENGINEERS, INC. (ASHRAE)

ASHRAE 3 (1998) Reducing Emission of Fully Halogenated Refrigerants  
in Refrigeration and Air-Conditioning Equipment and Systems

ASHRAE SSPC 135 (1995) The Building Automation and Control Network  
(BACnet) Standard

#### AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME/ANSI B16.5 (1996) Pipe Flanges and Flanged Fittings NPS 1/2 Through  
NPS 24

ANSI B16.18 (1984; R 1994) Cast Copper Alloy Solder Joint Pressure  
Fittings

ASME/ANSI B16.22 (1995) Wrought Copper and Copper Alloy Solder Joint  
Pressure Fittings

ASME/ANSI B16.26 (1988) Cast Copper Alloy Fittings for Flared Copper Tubes

ASME/ANSI B16.34 (1996) Valves - Flanged, Threaded, and Welding End

ASME B31.1 (1995) Power Piping

ANSI/ASME B40.1 (1991; Special Notice 1992) Gauges - Pressure Indicating  
Dial Type - Elastic Element

ASME BPVC SEC VIII (1995; Addenda 1995) Boiler and Pressure Vessel Codes:  
Section VIII Pressure Vessels

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 126 (1995) Gray Iron Castings  
ASTM B 32 91996) Solder Metal  
ASTM B 75 (1995; Rev. A) Seamless Copper Tube  
ASTM B 88M (1996) Seamless Copper Water Tube (Metric)  
ASTM B 88 (1996) Seamless Copper Water Tube  
ASTM D 638 (1995) Tensile Properties of Plastics  
ASTM D 792 (1991) Density and Specific Gravity (Relative Density) of  
Plastics by Displacement  
ASTM D 1238 (1995) Flow Rates of Thermoplastics by Extrusion  
Plastometer  
ASTM D 1693 (1995) Environmental Stress-Cracking of Ethylene Plastics

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (1996) National Electrical Code  
NFPA 90A (1993) Installation of Air Conditioning and Ventilating  
Systems

SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.  
(SMACNA)

SMACNA DCS (1995; Addendum 1997) HVAC Duct Construction Standards  
- Metal and Flexible  
SMACNA HVACTAB (1993) HVAC Systems Testing, Adjusting and Balancing

UNDERWRITERS LABORATORIES INC. (UL)

UL 506 (1994; R 1994, Bul. 1994, 1995, and 1996) Specialty  
Transformers  
UL 916 (1994; Bul. 1994 and 1996, R 1996) Energy Management  
Equipment  
UL 1449 (1985; Errata 1986, Bul. 1993, 1994, and 1995) Transient  
Voltage Surge Suppressors

## 1.2 DEFINITIONS

### 1.2.1 Digital Controller

#### 1.2.1.1 Interoperable Digital Controller (IDC)

A control module which is microprocessor based Interoperable LonMark™ or LonWorks. HVAC control is accomplished using LonMark™ based devices where the application has a LonMark™ profile defined. Where LonMark™ devices are not available, devices based on LonWorks are acceptable providing that an XIF file is provided for the device. An IDC is programmable by the user, has integral input/output within the module or on network connected modules, and performs stand-alone operations.

#### 1.2.1.2 Interoperable BACnet Controller (IBC)

A control module which is microprocessor based Interoperable BACnet Controller in accordance with ANSI/ASHRAE Standard 135-1995. IBC's must be provided with product interoperability compliance statement documents that demonstrate the compliance level to the ANSI/ASHRAE Standard 135-1995.

### 1.2.2 Direct Digital Control (DDC)

Digital controls, as defined in this specification, performing control logic. The controller directly senses building environment and makes control decisions based on user defined, controller resident programs. The controller outputs control signals that directly operate valves, dampers, and motor controllers. No conventional control devices, pneumatic or electronic, such as receiver-controllers, thermostats, and logic units are present within or interface with a direct digital control loop. Actuators are electric or pneumatic, and the controller output is converted to the appropriate type of signal.

### 1.2.3 DDC System

A system made up of one or more interoperable digital controllers which communicate on a network.

### 1.2.4 Distributed Control

The intent of distributed control is to install the controllers near their respective controlled equipment. The control system consists of stand-alone controllers, with the total number of input and output points limited to 48 or less per controller. Failure of any single controller will not cause the loss of more than 48 control points.

### 1.2.5 Dynamic Control

A process that optimizes energy efficiency of HVAC systems (air handling units, converters, chillers, and boilers) by increasing and decreasing setpoints or starting and stopping equipment in response to heating and cooling needs of the facility. A requirement of dynamic control is knowing the heating/cooling demand status of the process. Therefore dynamic control requires controllers connected in a communications network.

### 1.2.6 Firmware

Firmware is software programmed into read only memory (ROM) and erasable programmable read only memory (EPROM) chips. Software may not be changed without physically altering the chip.

### 1.2.7 Graphic User Interface Software (GUI)

Graphic user interface software shall run on Microsoft Windows NT Workstation 4.0 service Pack 4, or later. The GUI employs browser like functionality that includes a tree view (similar to Windows Explorer) for quick viewing of, and access to, the hierarchical structure of the database. Pull down menus and toolbars employ buttons, commands and navigation that permit the operator to perform tasks with a minimum knowledge of the HVAC Control System and basic computing skills. These include, but are not limited to, forward/backward buttons, home button, and a context sensitive locator line (similar to a URL line), that displays the location and the selected object definition.

### 1.2.8 Hand-Held Terminal

A hand-held terminal is a manufacturer specific device connected directly to a communications port on a controller, through which the controller is accessed and, in some cases, programmed.

### 1.2.9 Input/Output (I/O) Points

I/O points refer to analog inputs (AI), digital inputs (DI), analog outputs (AO), and digital outputs (DO) in a digital controller. Another term for digital inputs and outputs is binary inputs and outputs. Inputs are from analog sensors (temperature, pressure, humidity, flow) and digital sensors (motor status, flow switches, switch position, and pulse output devices). Outputs operate modulating and on/off control devices.

### 1.2.10 I/O Expansion Unit

An I/O expansion unit provides additional point capacity to a digital controller and communicates with the stand-alone digital controller on a LAN. An I/O unit is not stand-alone because the control program does not reside in the I/O unit. An I/O expander which connects directly to a stand alone controller through a multi-line microprocessor bus is restricted to reside within 3 feet of the stand alone controller and is considered part of the stand alone controller.

### 1.2.11 Local Area Network (LAN)

a. A communications bus that interconnects digital controllers for peer-to-peer (see "peer-to-peer" below) communications. Different levels of LANs are possible within a single DDC system. In this case, a digital controller on a higher level LAN acts as a network controller to the controllers on the lower level LAN. The network controller, then, has at least two LAN communications ports. One port supports peer-to-peer communications with other digital controllers on the higher level LAN. The other port supports communications with the digital controllers on the lower level LAN.

b. LANs permit sharing global information. This allows building and site wide control strategies such as peak demand limiting, dynamic control strategies, coordinated response to alarm conditions, and remote monitoring and programming of digital controllers.

### 1.2.12 Microprocessor

A microprocessor refers to the central processing unit (CPU) that contains all registers and logic circuitry that allow digital controllers to function.

### 1.2.13 Network Area Controller (NAC)

A network area controller (NAC) provides the interface between a higher level LAN or WAN and the interoperable digital controllers, providing global supervisory control functions. NAC's provide multiple user access at varying levels through password protection.



### 1.2.13 Output Signal Conversion

Output signal conversion refers to changing one kind of control output into a proportionally related signal appropriate for direct actuation of the controlled device. An example is converting a 4 to 20 mA or 0 to 10 VDC signal to a proportional 20 to 103 kPa (3 to 15 psig) signal to operate a pneumatic actuator.

### 1.2.14 Optimum Start

Optimum start is a method of starting HVAC equipment prior to scheduled occupancy in order to have the building at setpoint when occupied. Optimum start is based on the zone temperatures, zone setpoints, and outdoor temperature.

### 1.2.15 Peer-to-Peer

Peer-to-peer refers to controllers connected on a communications LAN that act independently, as equals, and communicate with each other to pass information.

### 1.2.16 Performance Verification Test

The performance verification test (PVT) is the formal commissioning of the DDC system performed after successful contractor field testing and prior to the second phase of DDC training. It is used as a means for final acceptance of the control system.

### 1.2.17 PID

PID refers to proportional, integral, and derivative control; the three types of action that are used in controlling modulating equipment.

### 1.2.18 Resolution

Refers to the number of possible states an input value or output value can take and is a function of the digital controller I/O circuitry; the A/D converter for input and the D/A converter for output. Ten bit resolution has 1024 possible states.

### 1.2.19 Stand-Alone Control

Refers to the digital controller performing required climate control, and energy management functions without connection to another digital controller or computer. Requirements for stand-alone control are a time clock, a microprocessor, resident control programs, PID control, and I/O. All stand-alone controllers have a communication port and firmware for direct connection and interrogation with a laptop computer or similar hand-held device. This interrogation includes parameter changes and program downloads.

### 1.2.20 Terminal Control Unit (TCU)

An off-the-shelf, stand-alone digital controller equipped for communication on a lower level LAN. TCUs may deviate from stand-alone only in receiving energy management and time information from a stand alone digital controller. A TCU is commonly application specific and is used for distributed control of specific HVAC subsystems. A TCU communicates with other digital controllers. Typically, a TCU communicates on a lower level LAN. Examples where TCUs are used include small air handling units (AHUs), variable air volume (VAV) boxes, fan coil units, and heat pumps.

## 1.4 TEMPERATURE CONTROL AND FACILITY MANAGEMENT AND CONTROL SYSTEM

The entire Temperature Control System (TCS) shall be comprised of a network of interoperable, stand-alone digital controllers communicating via LonMark/LonTalk and/or BACnet communication protocols to a Network Area Controller (NAC).

The NAC shall connect to the owner's local or wide area network, depending on configuration. Access to the system, either locally in each building, or remotely from a central site or sites, shall be accomplished through standard Web browsers, via the Internet and/or local area network.

The Facility Management and Control System (FMCS) shall be comprised of a network of interoperable, stand-alone digital controllers communicating on an open protocol communication network to a host computer within the facility (when specified) using graphical user interface software and communicating via the Public Works intranet to a host computer in a remote location. The FMCS shall communicate to third party systems such as chillers, boilers, air handling systems, energy metering systems, other energy management systems, access control systems, fire-life safety systems and other building management related devices with open, interoperable communication capabilities.

Provide a new TC and FMCS including associated equipment and accessories. Manufacturer's products, including design, materials, fabrication, assembly, erection, examination, inspection, and testing shall be in accordance with ASME B31.1 and NFPA 70, except as modified herein or indicated otherwise.

The TC systems shall maintain stable temperature control and all other conditions as indicated. The end-to-end accuracy of the system, including temperature sensor error, wiring error, A/D conversion, and display, shall be .5 degree C (1 degree F) or less.

## 1.4 DDC SYSTEM DESCRIPTION

### 1.4.1 Design Requirements

#### 1.4.1.1 Control System Schematic

Provide control system schematic that includes the following:

- a. Location of each input and output device
- b. Flow diagram of each HVAC component, for instance flow through coils, fans, dampers
- c. Name or symbol for each component such as V-1, DM-2, and T-1 for a valve, damper motor, and temperature sensor, respectively
- d. Setpoints
- e. Sensor range
- f. Actuator range
- g. Valve and damper schedules and normal position
- h. Switch points on input switches

- i. Written sequence of operation for each schematic
- j. Schedule identifying each sensor and controlled device with the following information:
  - (1) LAN and Software point name with send and receive address if applicable
  - (2) Point type (AO, AI, DO, DI)
  - (3) Point range
  - (4) Digital controller number for each point

#### 1.4.1.2 Electrical Equipment Ladder Diagrams

Submit diagrams showing electrical equipment interlocks, including voltages and currents.

#### 1.4.1.3 Component Wiring Diagrams

Submit a wiring diagram for each type of input device and each type of output device. Diagram shall show how the device is wired and powered; showing typical connections at the digital controller and each power supply, as well as at the device itself. Show for all field connected devices, including, but not limited to, control relays, motor starters, electric or electronic actuators, and temperature, pressure, flow, proof, and humidity sensors and transmitters.

#### 1.4.1.4 Terminal Strip Diagrams

Submit a diagram of each terminal strip, including digital controller base terminal strips (digital controllers shall not be directly wired for ease of removal and replacement), terminal strip location, termination numbers and the associated point names.

#### 1.4.1.5 Communication Architecture Schematic

Submit a schematic showing communication networks used for all DDC system controllers, workstations, and field interface devices. Schematic shall show hierarchical topology. The supplied system must incorporate the ability to access all data using Java enabled browsers without requiring proprietary operator interface and configuration programs. An Open DataBase Connectivity (ODBC) or Structured Query Language (SQL) compliant server database is required for all system database parameter storage. This data shall reside on a supplier-installed server for all database access. Systems requiring proprietary database and user interface programs shall not be acceptable.

### 1.5 SUBMITTALS

Submit manufacturers' specification sheets for each type of equipment to show compliance with the project specification. For each type of equipment highlight each compliance item and reference each item to the relevant specification paragraph number. Submit sufficient manufacturers' information to allow verification of compliance by the reviewing authority. Equipment and software for which specification compliance data shall be submitted includes but is not limited to the following:

SD-01 Preconstruction Submittals

List of Drawings

List of Symbols and Abbreviations Used on Drawings

List of I/O Points

Equipment Components List

AC Power Table

#### SD-02 Shop Drawings

Drawings shall be on A1 (841 by 594 mm) 34 by 22 inch sheets in the form and arrangement shown. The drawings shall use the same abbreviations, symbols, nomenclature and identifiers shown. Each control system element on a drawing shall have a unique identifier as shown. The HVAC Control System Drawings shall be delivered together as a complete submittal. Deviations must be approved by the Contracting Officer. Drawings shall be submitted along with Submittal SD-01, Data.

- a. HVAC Control System Drawings shall include the following:

Sheet One: Drawing Index, HVAC Control System Legend.

Sheet Two: Valve Schedule, Damper Schedule.

Sheet Three: Compressed Air Station Schematic (if applicable).

Sheet Four: Control System Schematic and Equipment Schedule.

Sheet Five: Sequence of Operation and Data Terminal Strip Layout.

Sheet Six: Control Loop Wiring Diagrams and Ladder Diagrams

Sheet Seven: Motor Starter and Relay Wiring Diagram.

Sheet Eight: Communication Network Architecture and Block Diagram.

Sheet Nine: DDC Panel Installation and Block Diagram.

(Repeat Sheets Four through Seven for each AHU System.)

b. The HVAC Control System Drawing Index shall show the name and number of the building and military site. The Drawing Index shall list HVAC Control System Drawings, including the drawing number, sheet number, drawing title, and computer filename when used. The HVAC Control System Legend shall show generic symbols and the name of devices shown on the HVAC Control System Drawings.

c. The valve schedule shall include each valve's unique identifier, size, flow coefficient Kv (Cv), pressure drop at specified flow rate, spring range, positive positioner range, actuator size, close-off pressure data, dimensions, and access and clearance requirements data. Valve schedules may be submitted in advance but shall be included in the complete submittal.

d. The damper schedule shall contain each damper's and each actuator's identifier, nominal and actual sizes, orientation of axis and frame, direction of blade rotation, spring ranges, operation rate, positive positioner ranges, locations of actuators and damper end switches, arrangement of sections in multi-section dampers, and methods of connecting

dampers, actuators, and linkages. The Damper Schedule shall include the maximum leakage rate at the operating static-pressure differential. The Damper Schedule shall contain actuator selection data supported by calculations of the torque required to move and seal the dampers, access and clearance requirements. Damper schedules may be submitted in advance but shall be included in the complete submittal.

e. The compressed air station schematic diagram shall show all equipment, including: compressor with motor horsepower and voltage; starter; isolators; manual bypasses; tubing sizes; drain piping and drain traps; reducing valves; dryer; and data on manufacturer's names and model numbers, mounting, access, and clearance requirements. Air Compressor and air dryer data shall include calculations of the air consumption of all current-to-pneumatic transducers and of any other control system devices to be connected to the compressed air station, and the compressed air supply dewpoint temperature at 140 kPa (20 psig). Compressed air station schematic drawings shall be submitted for each compressed air station.

f. The HVAC control system schematics shall show all control and mechanical devices associated with the HVAC system. A system schematic drawing shall be submitted for each HVAC system.

g. The HVAC control system equipment Schedule shall be developed. All devices shall have unique identifiers and shall be referenced in the equipment schedule. Information to be included in the equipment schedule shall be the control loop, device unique identifier, device function, setpoint, input range, and additional important parameters (i.e., output range). An equipment schedule shall be submitted for each HVAC system.

h. The HVAC control system sequence of operation shall reflect the language and format of this specification, and shall refer to the devices by their unique identifiers as shown. No operational deviations from specified sequences will be permitted without prior written approval of the Contracting Officer. Sequences of operation shall be submitted for each HVAC control system including each type of terminal unit control system.

i. The HVAC control system wiring diagrams shall be functional wiring diagrams which show the interconnection of conductors and cables to HVAC control panel terminal blocks and to the identified terminals of devices, starters and package equipment. The wiring diagrams shall show necessary jumpers and ground connections. The wiring diagrams shall show the labels of all conductors. Sources of power required for HVAC control systems and for packaged equipment control systems shall be identified back to the panel board circuit breaker number, HVAC system control panel, magnetic starter, or packaged equipment control circuit. Each power supply and transformer not integral to a controller, starter, or packaged equipment shall be shown. The connected volt-ampere load and the power supply volt-ampere rating shall be shown. Wiring diagrams shall be submitted for each HVAC control system.

#### SD-03 Product Data

DDC hardware

DDC capabilities

Variable frequency drive hardware

Workstation software

Input devices

Output devices

Surge and transient protection

Notebook computer

Hand-held terminal

Smoke detectors

Pneumatic tubing

#### SD-06 Test Reports

Field tests

Commissioning Report

Three copies of the HVAC control system commissioning procedures, in booklet form and indexed, 60 days prior to the scheduled start of commissioning. Commissioning procedures shall be provided for each HVAC control system, and for each type of terminal unit control system. The Commissioning procedures shall reflect the format and language of this specification, and refer to devices by their unique identifiers as provided by the contractor, or if applicable, as shown. The Commissioning procedures shall be specific for each HVAC system, and shall give detailed step-by-step procedures for commissioning of the system.

a. The Commissioning procedures shall include detailed, product specific set-up procedures, configuration procedures, adjustment procedures, and calibration procedures for each device. Where the detailed product specific commissioning procedures are included in manufacturer supplied manuals, reference may be made in the HVAC control system commissioning procedures to the manuals.

b. An HVAC control system commissioning procedures equipment list shall be included that lists the equipment to be used to accomplish commissioning. The list shall include manufacturer name, model number, equipment function, the date of the latest calibration, and the results of the latest calibration.

Performance verification tests

Three copies of the HVAC Control System Performance Verification Test Procedures, in booklet form and indexed, 60 days before the Contractor's scheduled test dates. The performance verification test procedures shall refer to the devices by their unique identifiers as shown, shall explain, step-by-step, the actions and expected results that will demonstrate that the HVAC control system performs in accordance with the sequences of operation, and other contract documents. An HVAC control system performance verification test equipment list shall be included that lists the equipment to be used during performance verification testing. The list shall include manufacturer name, model number, equipment function, the date of the latest calibration, and the results of the latest calibration.

Training

Three copies of an outline for the HVAC control system training course with a proposed time schedule. Approval of the planned training schedule shall be obtained from the Government at least 60 days prior to the start of the training. Six copies of HVAC control

system training course material 30 days prior to the scheduled start of the training course. The training course material shall include the operation manual, maintenance and repair manual, and paper copies of overheads used in the course.

#### SD-07 Certificates

Contractors' Qualifications

Training

Pressure Tank Certification

#### SD-10 Operation and Maintenance Data

Controls and HVAC System Operators Manual

Provide three copies of a Control and HVAC Systems Operators Manual. Provide in a 3 ring binder with a minimum of the following 7 sections. Use tabs to divide each section.

- a. Description of HVAC Systems: Provide a description of the HVAC system components and control system. Include sequence of operation and a complete points list.
- b. Controls Drawings: Provide drawings as specified in submittal paragraph.
- c. Control Program Listings: Provide listing of all control programs, including terminal equipment controller setup pages if used.
- d. Current Operating Parameters: Provide printouts of input and output setup information, (database setups). This section provides information such as point addresses, slopes and offsets for all points, database of points, etc.
- e. Design Information: Provide tab, but leave this section blank.
- f. Control Equipment Technical Data Sheets: Provide technical data sheets for all controller hardware and accessories.
- g. Backup of Control Program: Provide backup copies of the control program and ACAD control drawings on 3.5 inch disks, CD-ROM, and 100MB Zip Disks.

DDC Manufacturer's Hardware and Software Manuals

Provide three copies of the following manuals.

- a. Installation and Technical Manuals for all digital controller hardware.
- b. Installation and Technical Manuals for workstation.
- c. Operator Manuals for all digital controllers.
- d. Operator Manuals for all workstation software.
- e. Programming Manuals for all digital controllers.

- f. Programming Manuals for workstation software.

#### SD-11 Closeout Submittals

Posted operating instructions:

Air compressors

Refrigerated air dryer

Provide administrative and closeout submittals:

Training course documentation

Service organizations

Contractor certification

### 1.6 OPERATING ENVIRONMENT

Protect components from humidity and temperature variations, dust, and other contaminants, within limits published by the manufacturer.

### 1.7 QUALITY ASSURANCE

#### 1.7.1 Standard Products

a. Material and equipment shall be standard products of manufacturer regularly engaged in the manufacturing of such product, using similar materials, design and workmanship. The standard products shall have been in commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of similarly sized equipment and materials used under similar circumstances and sold on the commercial market through advertisements, manufacturers' catalogs, or brochures.

b. Products are supported by a local service organization.

#### 1.7.2 Nameplates and Tags

a. Nameplates and tags bearing device unique identifiers shall be engraved or stamped. Permanently attach nameplates to HVAC control panel doors and back plates.

b. For each field mounted piece of equipment attach a plastic or metal tag with equipment name and point identifier.

#### 1.7.3 Verification of Dimensions

The contractor shall verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing work.

#### 1.7.4 Drawings

Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. The Contractor shall carefully investigate the mechanical, electrical,



and finish conditions that could affect the work, and shall furnish all work necessary to meet such conditions.

#### 1.7.5 Contractors Qualifications

- a. The Contractor or subcontractor performing the work shall have completed at least three DDC systems installations of a similar design and have successfully operated a similar sequence of operation for at least three years.

#### 1.7.6 Pressure Tank Certification

Provide certification stating pressure tanks are constructed and labeled in accordance with ASME BPVC SEC VIII for a minimum of 125 psig working pressure.

#### 1.7.7 Training Course Documentation

Training course documentation shall include a manual for each trainee plus two additional copies and two copies of audiovisual training aids, if used. Documentation shall include an agenda, defined objectives for each lesson and detailed description of the subject matter of each lesson.

#### 1.7.8 Service Organizations

Qualified service organization list that shall include the names and telephone numbers of organizations qualified to service the HVAC control systems.

#### 1.7.9 Contractor Certification

Provide certification that the installation of the control system is complete and meets the technical requirements of this section.

#### 1.7.10 Modification of References

The advisory provision in ASME B31.1 and NFPA 70 are mandatory. Substitute the word "shall" for "should" wherever it appears and interpret all references to the "authority having jurisdiction" and "owner" to mean the Contracting Officer.

### 1.8 WARRANTY

#### 1.8.1 Year 2000 (Y2K) Compliance Warranty

For each product, component and system specified in this section as a "computer controlled facility component" provide a statement of Y2K compliance warranty. The contractor warrants that each hardware, software, and firmware product delivered under this contract is able to accurately process date and time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, including years 1999 and 2000 and leap year calculations. The duration of this warranty and the remedies available to the Government for breach of this warranty shall be defined in, and subject to, the terms and limitations of the contractor's standard commercial warranty or warranties contained in this contract. Nothing in this warranty shall be construed to limit any rights or remedies the Government may otherwise have under this contract, with respect to defects other than Year 2000 performance.

## PART 2 PRODUCTS

### 2.1 DDC SYSTEM

- a. Provide a DDC system as a distributed control system. The system shall have stand-alone Interoperable LonMark™ or LonWorks, or BACnet digital controllers, a communications Network, and a separate workstation computer with workstation software.
- b. Provide an operator programmable system to perform closed-loop, modulating control of building equipment. Connect all digital controllers through the communication network to share common data and report to workstation computers. Provide workstation DDC software capable of programming and monitoring the digital controllers. The control system shall be capable of downloading programs between the workstation and digital controllers.
- c. Provide the quantity of digital controllers as required to perform the sequences of operation, or where shown, as indicated on the drawings to perform required climate control, energy management, and alarm functions. The quantity of controllers shall be no less than that required to perform the sequences of operation within the parameters indicated in these specifications. All material used shall be currently in production.

#### 2.1.1 Interoperable Direct Digital Controllers

DDC hardware shall be UL 916 rated. Interoperable controllers (IDC's) shall be LonMark™ or LonWorks bearing the applicable LonMark™ interoperability logo. Where LonMark™ devices are not available, devices based on LonWorks are acceptable providing that an XIF file is provided for the device. Controllers shall be programmable by the user, have integral input/output within the module or on network connected modules, and perform stand-alone operations. Interoperable BACnet Controllers (IBC's) shall be in accordance with ANSI/ASHRAE Standard 135-1995. IBC's must be provided with product interoperability compliance statement documents that demonstrate the compliance level to the ANSI/ASHRAE Standard 135-1995.

##### 2.1.1.1 Distributed Control

Apply digital controllers in a distributed control manner.

##### 2.1.1.2 I/O Point Limitation

Total number of I/O hardware points, including those communicated over a LAN, used by a single stand-alone digital controller, including I/O expansion units shall not exceed 48.

##### 2.1.1.3 Environmental Operating Limits

Provide digital controllers that operate in environmental conditions between 32 and 120 degrees F.

##### 2.1.1.4 Stand-Alone Control

Provide stand-alone digital controllers.

##### 2.1.1.5 Internal Clock

Provide a clock with each stand-alone controller. Each controller shall have its clock backed up by a battery or capacitor with sufficient capacity to maintain clock operation for a minimum of 72 hours during power outage.

#### 2.1.1.6 Memory

- a. Provide sufficient memory for each controller to support required control, communication, trends, alarms, and messages
- b. Memory Protection: Programs residing in memory shall be protected either by using EEPROM, flash memory, or by an uninterruptible power source (battery or uninterruptible power supply (UPS)). The backup power source shall have sufficient capacity to maintain volatile memory during an AC power failure. Where the uninterruptible power source is rechargeable (a rechargeable battery), provide sufficient back-up capacity for a minimum of seventy-two hours. The rechargeable power source shall be constantly charged while the controller is operating under normal line power. Where a non-rechargeable power source is used, provide sufficient capacity for a minimum of two years accumulated power failure. Batteries shall be replaceable without soldering.

#### 2.1.1.7 Inputs

Provide input function integral to the direct digital controller. Provide input type(s) as required by the DDC design. For each type of input used on high-level controllers, provide at least one similar spare input point per controller.

- a. Analog Inputs: Allowable input types are 100 ohm (or higher) platinum RTDs, thermistors, 4 to 20 mA, and 0-10 VDC. Thermistor and direct RTD inputs must have appropriate conversion curves stored in controller software or firmware. Analog to digital (A/D) conversion shall have 10-bit minimum resolution.
- b. Digital Inputs: Digital inputs shall sense open/close, on/off, or other two state indications.

#### 2.1.1.8 Outputs

Provide output function integral to the direct digital controller. Provide output type(s) as required by the DDC design. For each type of output used on high-level controllers, provide at least one similar spare output point per controller.

- a. Analog Outputs: Provide controllers with a minimum output resolution of 10 bits. Output shall be 4 to 20 mA, 0 to 10 VDC, or 0 to 20 psig. Each pneumatic output shall have feedback for monitoring of the actual pneumatic signal.
- b. Digital Outputs: Provide contact closure with contacts rated at a minimum of 1 ampere at 24 volts.

#### 2.1.1.9 PID Control

Provide controllers with proportional integral, and derivative control capability. Terminal controllers are not required to have the derivative component.

#### 2.1.1.10 Digital Controller Networking Capabilities

The intent of this specification is to provide a peer-to-peer networked, stand-alone, distributed control system with the capability to integrate both the ANSI/ASHRAE Standard 135-1995 BACnet and LonWorks technology communication protocols in one open, interoperable system. The upper level digital controllers shall be capable of networking with other similar

upper level controllers. Upper level controllers shall also be capable of communicating over a network between buildings.

#### 2.1.1.10.1 LonMark™ IDC Networking Capabilities

The contractor shall run the LonWorks network trunk to the nearest Network Area Controller (NAC). Coordinate locations of the NAC to ensure that maximum network wiring distances, as specified by the LonWorks wiring guidelines, are not exceeded. A maximum of 126 devices may occupy any one LonWorks trunk and must be installed using the appropriate trunk termination device. All LonWorks and LonMark devices must be supplied using FTT-10A LonWorks communications transceivers. The IDCs shall communicate with the NAC at a baud rate of not less than 78.8K baud. The IDC shall provide LED indication of communication and controller performance to the technician, without cover removal.

#### 2.1.1.10.2 IBC Networking Capabilities

The system supplier must provide a PICS document showing the installed systems compliance level to the ANSI/ASHRAE Standard 135-1995, to the Division 17 contractor. Minimum compliance is Level 3.

Physical connection of BACnet devices shall be via Ethernet.

The IBC Sensor shall connect directly to the IBC and shall not utilize any of the I/O points of the controller. The IBC Sensor shall provide a two-wire connection to the controller that is polarity and wire type insensitive. The IBC Sensor shall provide a communications jack for connection to the BACnet communication trunk to which the IBC controller is connected. The IBC Sensor, the connected controller, and all other devices on the BACnet bus shall be accessible by the portable operators terminal (POT).

#### 2.1.1.11 Communications Ports

a. Controller-to-Controller LAN Communications Ports: Controllers in the building DDC system shall be connected in a communications network. Controllers shall have controller to controller communication ports to both peer controller (upper level controllers) and terminal controllers (lower level controllers). Network may consist of more than one level of local area network and one level may have multiple drops. Communications network shall permit sharing information between controllers, allowing execution of dynamic control strategies, and coordinated response to alarm conditions. Minimum baud rate for the lowest level LAN shall be 9600 Baud. Minimum baud rate for the highest level LAN shall be 9600 Baud. Minimum baud rate for a DDC system consisting of a single LAN shall be 9600 Baud.

b. On-Site Interface Ports: Provide a RS-232, RS-485, or RJ-11 communications port for each digital controller that allows direct connection of a computer or hand held terminal and through which the controller may be fully accessed. Controller access shall not be limited to access through another controller. On-site interface communication ports shall be in addition to the communications port(s) supporting controller to controller communications. Communication rate shall be 9600-Baud minimum. Every controller on the highest level LAN shall have a communications port supporting direct connection of a computer; a hand held terminal port is not sufficient. By connecting a computer to this port, every controller in the direct digital control system shall be able to be fully accessed and programmed. The following operations shall be available: downloading and uploading control programs, modifying programs and program data base, and retrieving or accepting trend reports, status reports, messages, and alarms.

c. Remote Work Station Interface Port: Provide one additional direct connect computer port in each DDC system for permanent connection of a remote operator's work station, unless the workstation is a node on the LAN. All operations possible by directly connecting a computer to a controller at the highest level LAN shall be available through this port.

d. Telecommunications Interface Port: Provide one additional telecommunications port in each DDC system permitting remote communications via telephone. All operations possible by directly connecting a computer to a controller at the highest level LAN shall be available through the telecommunications port. A telecommunications port provided on a digital controller shall be in addition to the port required for directly connecting a computer to the controller. Telecommunication baud rate shall be 28000 minimum.

#### 2.1.1.12 Y2K Compliant

Provide computer controlled facility components, specified in this section, that are Year 2000 compliant (Y2K). Computer controlled facility components refers to software driven technology and embedded microchip technology. This includes, but is not limited to, computers, telecommunications switches, meters, HVAC controllers, utility monitoring and control systems, fire detection instruments, alarms, security systems, and other facilities control systems utilizing microcomputer, minicomputer, or programmable logic controllers

#### 2.1.1.13 Modem

Provide two modems per DDC system to communicate between the digital control system and the computer workstation. Minimum modem baud rate is 56 Kbaud with v.90 communication standard.

#### 2.1.1.14 Digital Controller Cabinet

Each indoor digital controller cabinet shall protect the controller from dust and shall be rated NEMA 1, unless specified otherwise. Each outdoor digital controller cabinet shall protect the controller from all outside conditions and shall be rated NEMA 4. Cabinets for high level controllers shall be hinged door, lockable, and have offset removable metal back plate.

#### 2.1.1.15 Main Power Switch

Each controller on the highest level LAN or each control cabinet shall have a main external power switch for isolation of the controller from AC power. The switch shall be located in the DDC cabinet.

#### 2.1.2 Terminal Control Units

- a. The same company as the digital controllers shall manufacture TCUs.
- b. TCUs shall automatically start-up on return of power after a failure, and previous operating parameters shall exist or shall be automatically downloaded from a digital controller on a higher level LAN.
- c. TCUs do not require an internal clock, if they get time information from a higher level digital controller.

#### 2.1.3 DDC Software

The Contracting Officers representative shall sign a copy of the manufacturer's standard software and firmware licensing agreement as a condition of this contract. Such license shall grant use of all programs and application software to Ft. Lewis as defined by the

manufacturer's license agreement, but shall protect manufacturer's rights to disclosure of trade secrets contained within such software. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. In addition, adherence to industry standards including ANSI / ASHRAE™ Standard 135-1995, BACnet and LonMark to assure interoperability between all system components is required. For each LonWorks device that does not have LonMark certification, the device supplier must provide an XIF file for the device. For each BACnet device, the device supplier must provide a PICS document showing the installed device's compliance level. Minimum compliance is Level 3; with the ability to support data read and write functionality.

#### 2.1.3.1 Sequence of Control

Provide, in the digital controllers, software to execute the sequence of control. Provide one registered copy of all software used to program control sequences in direct digital controllers, LAN controllers and field configurable smart controllers on the stationary (notebook) workstation. Provide any access keys which restrict programming language software functions or the ability to compile or prepare programming for download to controllers. Provide final copy of each program used in the system in both compiled and editable formats. Where specially programmed factory configured smart controllers are used in the system, provide the minimum factory programming tools and specialized controller programs ready for download to replacement controllers. At minimum, controllers must be capable of performing programming functions outlined in the following "Parameter Modification" section.

#### 2.1.3.2 Parameter Modification

Provide software to modify control parameters. Parameter modification shall be accomplished for all controllers (high level and low level application specific) through the main workstation computer and with laptop computer or keypad terminal directly at each controller. The supplied computer software shall employ object-oriented technology (OOT) for representation of all data and control devices within the system. Modifications shall be accomplished without having to make changes directly in line-by-line programming. When the control program is of the line-by-line type, database parameters in the following list that take real number values shall require assignment of variable names so parameters can be changed without modifying programming. Alternatively, block programming languages shall provide for modification of these database parameters in fill-in-the-blank screens. Parameters of like type, including those in different high level and low level controllers, may be grouped together for a single, global change. For example, an operator may group all second floor space temperature setpoints into a group and raise the setpoint by two degrees with a single command. The following parameters shall be modifiable in this way:

- a. Setpoints
- b. Dead band limits and spans
- c. Reset schedules
- d. Switchover points
- e. PID gains and time between control output changes
- f. Time
- g. Timed local override time
- h. Occupancy schedules

- i. Holidays
- j. Alarm points, alarm limits, and alarm messages
- k. Point definition database
- l. Point enable, disable, and override
- m. Trend points, trend intervals, trend reports
- n. Analog input default values
- o. Passwords
- p. Communications parameters including network and telephone communications setups

#### 2.1.3.3 Differential

Where setpoint is in response to some analog input such as temperature, pressure, or humidity, include a setpoint differential for the control loop to prevent short cycling of control devices.

#### 2.1.3.4 Motor and Flow Status Delay

Provide an adjustable delay between when a motor is commanded on or off and when the control program looks to the motor or flow status input for confirmation of successful command execution.

#### 2.1.3.5 Runtime Accumulation

Provide resettable run time accumulation for each controlled digital output.

#### 2.1.3.6 Timed Local Override

Provide user definable adjustable run time for each push of a momentary contact timed local override. Pushes shall be cumulative with each push designating the same length of time. Provide a user definable limit on the number of contact closures summed, such as 6, before the contact closures are ignored. Timed local overrides are disabled during occupancy periods.

#### 2.1.3.7 Time Programs

Provide programs to automatically adjust for leap years, and make daylight savings time and standard time adjustments.

#### 2.1.3.8 Scheduling

- a. Individual controlled equipment shall be schedulable with schedule based on time of day, day of week, and day of year. Equipment may be associated into groups. Each group may be associated with a different schedule. Changing the schedule of a group shall change the schedule of all equipment in the group. Groups may be modified, created and deleted by the operator.
- b. Provide capability that will allow current schedules to be viewed and modified in a seven-day week format. When control program does not automatically compute holidays, provide capability to enter holiday schedules one full year at a time.

#### 2.1.3.9 Point Override

I/O and virtual points shall accept software overrides to any possible value.

#### 2.1.3.10 Alarming

I/O points and software points shall be alarmable. Alarms may be enabled and disabled for every point. Alarm limits shall be adjustable on analog points. Controllers connected to an external communications device such as a printer, terminal, or computer, shall download alarm and alarm message when alarm occurs. When a computer workstation is connected to a DDC system with a modem, operator selected alarm conditions will initiate a call and report to the computer or an alphanumeric pager. Otherwise alarms will be stored and automatically downloaded when a communications link occurs. The following conditions shall generate alarms:

- a. Motor is commanded on or off but the motor status input indicates no change
- b. Temperature, humidity, or pressure strays outside selectable limits
- c. An analog input takes a value indicating sensor failure
- d. A module is not communicating on the LAN
- e. A power outage occurs

#### 2.1.3.11 Messages

Messages shall be operator defined and assigned to alarm or status conditions. Messages shall be displayed on the workstation or printer when these conditions occur.

#### 2.1.3.12 Trending

DDC system shall have the capability to trend all I/O and virtual points. Points may be associated into groups. A trend report may be set up for each group. The period between logging consecutive trend values shall range from one minute to 60 minutes at a minimum. The minimum number of consecutive trend values stored at one time shall be 30 per variable. When trend memory is full, the most recent data shall overwrite the oldest data. Trend data shall be capable of being uploaded to computer. Trend data shall be available on a real time basis; trend data shall appear numerically and graphically on a connected computer's screen as the data is processed from the DDC system. Trend reports shall be capable of uploading to computer for storage.

#### 2.1.3.13 Status Display

Current status of I/O and virtual points shall be displayed on command. Points shall be associated into functional groups, such as all the I/O and virtual points associated with control of a single air handling unit, and displayed as a group, so the status of a single mechanical system can be readily checked. A group shall be selectable from a menu of groups having meaningful names; such as AHU-4, Second Floor, Chiller System, and other such names.

#### 2.1.3.14 Diagnostics

Each controller shall perform self-diagnostic routines and provide messages to an operator when errors are detected. The DDC system shall be capable of recognizing a non-responsive module on a LAN. The remaining, responsive modules on a LAN shall not operate in a degraded mode.



#### 2.1.3.15 Power Loss

During a power outage, each controller shall assume a disabled status and outputs shall go to a user definable state. Upon restoration of power, DDC system shall perform an orderly restart, with sequencing of outputs.

#### 2.1.3.16 Program Transfer

Provide software for download of control programs and database from a computer to controllers and upload of same to computer from controllers. Every digital controller in the DDC system shall be capable of being downloaded and uploaded to through a single controller on the highest level LAN.

#### 2.1.3.17 Password Protection

Provide at least three levels of password protection to the DDC system permitting different levels of access to the system. The lowest level allows monitoring only. The highest level allows full control of all functions, including setting new passwords.

#### 2.1.4 Workstation

- a. Provide a central workstation computer with installed software to provide an interface for monitoring, troubleshooting, and making adjustments to the program or operating parameters of all DDC controllers, including TCUs. The workstation shall also be capable of programming all controllers, including TCUs.
- b. DDC system shall routinely operate continuously without connection to the workstation. Information at the workstation is not required for day to day operations of the direct digital controllers.

##### 2.1.4.1 Hardware

The DDC system manufacturer shall recommend all workstation computer equipment and peripherals. The workstation shall be configured to operate according to the DDC system manufacturer's specifications. Workstation hardware shall be configured to allow operation of software, uploading and downloading of programs, and creation of graphics. At a minimum the workstation hardware shall consist of:

- a. Computer; computer shall use Microsoft Windows 98 or NT, and shall not have less than Intel Pentium II processor, running at 350 megahertz speed, 12 gigabyte hard disc, 128 megabyte RAM, 2 serial and 1 parallel port, 17 inch monitor with 740 x 1024 and 0.28 dpi minimum resolution, 101 character keyboard, a 1.4 megabyte 3 1/2 inch floppy drive, 48X internal CD ROM drive, internal 100MB Zip drive with 2 Zip disks.
- b. Mouse
- c. Printer; printer resolution shall be inkjet laser quality.
- d. 120-volt terminal strip UL 1449 6-outlet with surge protection.

##### 2.1.4.2 Software

Workstation software shall be recommended and supported by the DDC system manufacturer and configured to operate according to the DDC system manufacturer's specifications. Software shall be

resident in the workstation computer and permit monitoring and troubleshooting of the DDC system. Workstation software permits modification of controller parameters and control for all controllers, both high level and low level application specific. Operations shall be menu selected. Menu selections shall be made with a mouse.

- a. Menu System: Menu system shall allow an operator to select a particular function or access a particular screen through successive menu penetration.
- b. Controller Parameter Modification: The workstation software shall be an interface for performance specified in paragraph entitled "Parameter Modification" and available through direct connection of a computer to a digital controller. Parameter modification shall require only that an operator "fill in the blank" for a parameter on a screen requesting the information in plain language. Parameter modifications shall download to the appropriate controllers at operator request.
- c. Program modification: For systems using a line-by-line programming language, provide an off-line text editor, similar to a BASIC program editor, permitting modification of controller resident control programs. For systems using block programming languages provide a capability for linking blocks together to create new programs or modify existing programs. Program modifications shall download to appropriate controllers at operator request.

#### 2.1.4.3 Graphic-Based Software

The workstation shall use graphic-based software to provide a user-friendly interface to the DDC system. Graphic-based software shall provide graphical representation of the building, the buildings mechanical systems, and the DDC system. The current value and point name of every I/O point shall be shown on at least one graphic and in its appropriate physical location relative to building and mechanical systems.

- a. Graphics shall closely follow the style of the control drawings in representing mechanical systems, sensors, controlled devices, and point names.
- b. Graphic Title: Graphics shall have an identifying title visible when the graphic is being viewed.
- c. Dynamic Update: When the workstation is on-line with the control system, point data shall update dynamically on the graphic images.
- d. Graphic Penetration: Provide graphic penetration when the capability exists. For systems without graphic penetration, provide menu penetration for selection of individual graphics to give the same hierarchical affect provided by graphic penetration.
- e. Graphic Types: Graphic-based software shall have graphics of the building exterior, building section, floor plans, and mechanical systems. Provide the following graphics:
  - (1) Building Exterior Graphic: Show exterior architecture, major landmarks, and building number.
  - (2) Building Section Graphic: Show floors in section graphic with appropriate floor name on each floor.
  - (3) Floor Plan Graphics: Provide a single graphic for each floor, unless the graphic will contain more information than can reasonably be shown on a single graphic. Each heating or cooling zone within a floor plan shall have a zone name and its current temperature

displayed within the zone outline. Show each controlled variable in the zone. Provide visual warning for each point in alarm.

(4) Mechanical System Graphics: Provide two-dimensional drawings to symbolize mechanical equipment; do not use line drawings. Show controlled or sensed mechanical equipment. Each graphic shall consist of a single mechanical system; examples are a graphic for an air handling unit, a graphic for a VAV box, a graphic for a heating water system, and a graphic for a chiller system. Place sensors and controlled devices associated with mechanical equipment in their appropriate locations. Place point name and point value adjacent to sensor or controlled device. Provide visual warning of each point in alarm. Condition, such as zone temperature, associated with the mechanical system shall be shown on the graphic. Point values shall update dynamically on the graphic.

f. Graphic Editing: Full capacity as provided by a draw software package shall be included for operator editing of graphics. Graphics may be created, deleted, modified, and text added. Provide capability to store graphic symbols in a symbol directory and import these symbols into graphics. A minimum of 256 colors shall be available.

g. Dynamic Point Editing: Provide full editing capability for deleting, adding, and modifying dynamic points on graphics.

h. Trending: Trend data shall be displayed graphically, with control variable and process variable plotted as functions of time on the same chart. Graphic display of trend data shall be internal to the workstation software and not resulting from download of trend data into a third-party spreadsheet program such as Excel, unless such transfer is automatic and transparent to the operator, and the third-party software is included with the workstation software package. At the operator's discretion, trend data shall be plotted real time.

#### 2.1.5 Maintenance Personnel Interface Tools

Provide a notebook computer for field communication with the digital controllers. In addition to changing setpoints, and making operational changes, field personnel shall be able to download programs with the notebook computer.

##### 2.1.5.1 Notebook Computer

- a. Provide notebook computer, necessary software, and direct connection cable to communicate with all digital controllers and smart thermostats when directly connected.
- b. Provide notebook computer with the following features as a minimum:
  - (1) Pentium II 350 MHz with active matrix color screen
  - (2) Internal hard disk; minimum 6 Gigabytes
  - (3) Internal battery operation; for a minimum of 3 hours of operation.
  - (4) RAM; minimum 64 Megabytes
  - (5) 24X CD ROM and 3.5 inch 1.44 MB floppy drive
  - (6) Serial interface port to communicate with the digital controller. Parallel port to communicate with a printer.

(7) Software: Digital control manufacturer's graphic DDC software, and all other required programs installed. Windows 98 operating system installed. Include all documentation and original media.

## 2.2 SENSORS AND INPUT HARDWARE

### 2.2.1 Field Installed Temperature Sensors

#### 2.2.1.1 Thermistors

Precision thermistors may be used in temperature sensing applications below 200 degrees F. Sensor accuracy over the application range shall be 0.36 degree F or less between the range of 0 to 66 degrees C (32 to 150 degrees F). Stability error of the thermistor over five years shall not exceed 0.14 degrees C (0.25 degree F) cumulative. Sensor element and leads shall be encapsulated. Bead thermistors are not allowed. A/D conversion resolution error shall be kept to 0.06 degree C (0.1 degree F). Total error for a thermistor circuit shall not exceed 0.28 degree C (0.5 degree F), which includes sensor error and digital controller A/D conversion resolution error. Provide 18 gage twisted and shielded cable for thermistors.

#### 2.2.1.2 Resistance Temperature Detectors (RTDs)

Provide RTD sensors with 1000 ohm, or higher, platinum elements that are compatible with the digital controllers. Sensors shall be encapsulated in epoxy, series 300 stainless steel, anodized aluminum, or copper. Temperature sensor accuracy shall be 0.1 percent (1 ohm) of expected ohms (1000 ohms) at 0 degrees C (32 degrees F). Temperature sensor stability error over five years shall not exceed 0.14 degree C (0.25 degree F) cumulative. Direct connection of RTDs to digital controllers, without transmitters, is preferred provided controller supports direct connection of RTDs. When RTDs are connected directly to the controller, keep lead resistance error to 0.14 degree C (0.25 degree F) or less. Total error for a RTD circuit shall not exceed 0.28 degree C (0.5 degree F), which includes sensor error, lead resistance error or 4 to 20 mA or 0 to 10 VDC transmitter error, and A/D conversion resolution error.

#### 2.2.1.3 Temperature Sensor Details

- a. Room Type: Conceal element behind protective cover matched to the room interior. Room temperature sensors connected directly to application specific controllers shall have integral pushbutton, system override digital input button, and a setpoint adjustment lever
- b. Duct Averaging Type: Continuous averaging RTDs for ductwork applications shall be 30 centimeters in length for each 0.37 square meters (one foot in length for each 4 square feet) of ductwork cross-sectional area with a minimum length of 1.8 meter (6 feet). Probe type duct sensors of 30 centimeter (one foot) length minimum are acceptable in ducts 1.1 square meter (12 feet square) and less.
- c. Immersion Type: 75 mm (3 inches) total immersion for use with sensor wells, unless otherwise indicated.
- d. Sensor Wells: Stainless steel material. Provide heat-sensitive transfer agent between exterior sensor surface and interior well surface.
- e. Outside Air Type: Provide element on the buildings north side with sunshade to minimize solar effects. Mount element at least 75 mm (3 inches) from building outside wall. Sunshade shall not inhibit the flow of ambient air across the sensing element. Shade shall protect sensing element from snow, ice, and rain.

## 2.2.2 Transmitters

Transmitters shall have 4 to 20 mA or 0 to 10 VDC output linearly scaled to the temperature, pressure, humidity, or flow range sensed. Transmitter shall be matched to the sensor, factory calibrated, and sealed. Total error shall not exceed 0.1 percent at any point across the measured span. Supply voltage shall be 24 volts ac or dc. Transmitters shall have non-interactive offset and span adjustments. For temperature sensing, transmitter stability shall not exceed 0.05 degrees C (0.09 degrees F) a year.

### 2.2.2.1 Spans and Ranges

Transmitter spans or ranges shall meet the following:

a. Temperature:

(1) 28 degrees C (50 degrees F) span: Room, chilled water, cooling coil discharge air, return air sensors

(2) 56 degrees C (100 degrees F) span: Outside air, hot water, heating coil discharge air, mixed air sensors

(3) 111 degrees C (200 degrees F) span: High temperature hot water, heating hot water, chilled/hot water system sensors.

b. Pressure:

(1) -125 to 125 pascals (-0.5 to 0.5) inches water differential range: static pressure control of rooms

(2) 0 to 1250 pascals (0 to 5 inches) water differential range: Duct static pressure

(3) 0 to 689 kPa (0 to 100 psig) differential: Water differential pressure

c. Relative Humidity:

(1) 10 to 90 percent minimum relative humidity range

### 2.2.3 Relative Humidity Transmitters

Provide integral humidity transducer and transmitter. Output of relative humidity instrument shall be a 4 to 20 mA or 0 to 10 VDC signal proportional to full range of relative humidity input. Accuracy shall be 2 percent of full scale, long-term stability shall be less than one percent drift per year. Sensing element shall be polymer or thin film polymer type.

### 2.2.4 Pressure Transmitters

Provide integral pressure transducer and transmitter. Output of pressure instrument shall be a 4 to 20 mA or 0 to 10 VDC signal proportional to the pressure span. Span shall be as specified. Accuracy shall be 1.0 percent. Linearity shall be 0.1 percent.

### 2.2.5 Current Transducers

Provide current transducers to monitor amperage of motors. Select current transducer for normal measured amperage to be near 50 percent of full-scale range. Current transducers shall have an accuracy of one percent and 4 to 20 mA or 0 to 10 VDC output signal.

## 2.2.6 Air Quality Sensors

### 2.2.6.1 CO2 Sensor

Provide CO2 sensors with integral transducers where shown. Output signal shall be 4 to 20 mA or 0 to 10 VDC. Accuracy shall be  $\pm 5$  percent of full scale.

## 2.2.7 Input Switches

### 2.2.7.1 Timed Local Override

Provide momentary contact push button override with override time set in controller software. Provide to override DDC time of day program and activate occupancy program for assigned units. Upon expiration of override time, the control system shall return to time-of-day program. Time interval for the length of operation shall be software adjustable and shall expire unless reset.

### 2.2.7.2 Insertion Freeze Protection Switch

Electric switch shall be capillary type. Provide special purpose insertion thermostats with flexible elements a minimum of 6 meters (20 feet) in length for coil face areas up to 3.7 square meters (40 square feet). Switch contacts shall be rated for motor starter circuit voltage being interrupted. Switch shall be equipped with auxiliary set of contacts for input of switch status to digital controller. Provide additional elements or longer elements for larger coils at the rate of 30 centimeters (1-foot) of element per .37 square meters (4 square feet) of coil. Serpentine capillaries perpendicular to the air flow to uniformly sense the entire airflow. A freezing condition at 18-inch increments along the sensing element shall activate the thermostatic switch. Switch shall require manual reset after activation.

### 2.2.7.3 Electronic Airflow Measurement Stations and Transmitters

a. Station - Each station shall contain an array of velocity sensing elements and straightening vanes inside a flanged sheet metal casing. The velocity sensing elements shall be of the RTD or thermistor type. The sensing elements shall be distributed across the duct cross section in the quantity and pattern set forth for measurements and instruments of ASHRAE 3 and SMACNA HVACTAB for the traversing of ducted air flows. The resistance to airflow through the airflow measurement station shall not exceed 20 pascals (0.08 inch water gage) at an airflow of 10.16 meters per second (2,000 fpm). Station construction shall be suitable for operation at airflow of up to 25.4 meters per second (5,000 fpm) over a temperature range of 4 to 49 degrees C (20 to 120 degrees F), and accuracy shall be plus or minus 3 percent over a range of 0.635 to 12.7 meters per second (125 to 2,500 fpm) scaled to air volume.

b. Each transmitter shall produce a linear, temperature compensated 4 to 20 mA or 0 to 10 VDC output corresponding to the actual air flow. The transmitter shall be a 2-wire, loop powered device. The output error of the transmitter shall not exceed 0.5 percent of the calibrated measurement.

## 2.2.8 Energy Metering

### 2.2.8.1 Electric Meters

Provide kilowatt-hour (kWh) meter for building as indicated or specified. Integrate electric meter signal into DDC system; meter signal output must be compatible with DDC input. DDC shall measure both instantaneous and accumulated electrical usage.

a. Meter: ANSI C12.10. Provide watt-hour meter and socket corresponding to the ratios of the current transformers and transformer secondary voltage. Meters shall be selected for the building voltage, phase, four -wire wye system, three-element type with three current transformers. Meters shall be complete with a box mounted socket having automatic circuit closing bypass. Provide watt-hour meter with not less than four pointer-type kWh registers, provisions for pulse initiation, and a universal Class 2 indicating maximum kW demand register, sweep pointer indicating type, with a 30 -minute interval. Meter accuracy shall be within plus or minus one percent. The correct multiplier shall be provided on face of meter.

b. Current Transformers: ANSI C57.13. Provide three current transformers with 600-volt insulation, rated for metering with voltage, BIL, momentary, and burden ratings coordinated with the ratings of the associated meters. Provide a butyl molded donut or window type transformers mounted on a bracket to allow secondary cables to connect to the transformer bushings. Identify the wiring of the current transformer secondary feeders to permit field current measurements to be taken with hook-on ammeters.

## 2.3 OUTPUT HARDWARE

### 2.3.1 Dampers

Damper shall conform to SMACNA DCS.

a. A single damper section shall have blades no longer than 1220 mm (48 inches) and shall be no higher than 1830 mm (72 inches). Maximum damper blade width shall be 203 mm (8 inches). Larger sized damper shall be made from a combination of sections.

b. Dampers shall be steel, or other materials where shown. Flat blades shall be made rigid by folding the edges. Blades shall be provided with compressible seals at points of contact. The channel frames of the dampers shall be provided with jamb seals to minimize air leakage. Dampers shall not leak in excess of 102 L/s per square meter (20 cfm per square foot) at 996 Pa (4 inches water) gage static pressure when closed. Seals shall be suitable for an operating temperature range of minus 40 degrees C to 93 degrees C (40 degrees F to 200 degrees F). Dampers shall be rated at not less than 10 m/s (2000 fpm) air velocity. All blade-operating linkages shall be within the frame so that blade-connecting devices within the same damper section will not be located directly in the air stream. Damper axles shall be 13 mm (0.5 inch) (minimum) plated steel rods supported in the damper frame by stainless steel or bronze bearings. Blades mounted vertically shall be supported by thrust bearings. Pressure drop through dampers shall not exceed 10 Pa gage at 5 m/s (0.04 inch water gage at 1000 fpm) in the wide-open position. Frames shall not be less than 50 mm (2 inches) in width. Dampers shall be tested in accordance with AMCA 500.

c. Operating links external to dampers (such as crankarms, connecting rods, and line shafting for transmitting motion from damper actuators to dampers) shall withstand a load equal to twice the maximum required damper-operating force. Rod lengths shall be adjustable. Links shall be brass, bronze, zinc-coated steel, or stainless steel. Moving parts in contact with one another shall be of different materials. Working parts of joints and clevises shall be brass, bronze, or stainless steel. Adjustments of crankarms shall control the open and closed position of dampers.

## 2.3.2 Valves

### 2.3.2.1 Valve Assembly

Valves shall have stainless steel stems. Valve bodies shall be designed for not less than 862 kPa (gage) (125 psig) working pressure or 150 percent of the system operating pressure, whichever is greater. Valve leakage rating shall be 0.01 percent of rated Cv. Class 125 copper alloy valve bodies and Class 150 steel or stainless steel valves shall conform to ASME/ANSI B16.5 as a minimum. Cast iron valve components shall conform to ASTM A 126 Class B or C as a minimum.

### 2.3.2.2 Butterfly Valve Assembly

Butterfly valves shall be threaded lug type suitable for dead-end service and for modulation to the fully closed position, with noncorrosive discs, stainless steel shafts supported by bearing, and EPDM seats suitable for temperatures from minus 29 degrees C to plus 121 degrees C (minus 20 degrees F to plus 250 degrees F). Valves shall have a manual means of operation independent of the actuator.

### 2.3.2.3 Two-Way Valves

Two-way modulating valves shall have equal percentage characteristics.

### 2.3.2.4 Three-Way Valves

Three-way valves shall have equal percentage characteristics.

### 2.3.2.5 Duct Coil and Terminal Unit Coil Valves

Provide control valves with either flare-type or solder-type ends provided for duct or terminal-unit coils. Provide flare nuts for each flare-type end valve.

### 2.3.2.6 Valves for Chilled Water, Condenser Water and Glycol Service

a. Bodies for valves 40 mm (1 1/2 inches) and smaller shall be brass or bronze, with threaded or union ends. Bodies for valves from 50 to 80 mm (2 inches to 3 inches) inclusive shall be of brass, bronze or iron. Bodies for 50 mm (2 inch) valves shall have threaded ends. Bodies for valves from 65 to 80 mm (2 1/2 to 3 inches) shall have flanged-end connections. Internal valve trim shall be brass or bronze except that valve stems may be Type 316 stainless steel. Water valves shall be sized for a 21 kPa (3 psi) differential through the valve at rated flow, except as indicated otherwise. Select valve flow coefficient (Cv) for an actual pressure drop not less than 50 percent or greater than 125 percent of the design pressure drop at design flow.

b. Valves 100 mm (4 inches) and larger shall be butterfly valves.

### 2.3.2.7 Valves for Hot Water Service

Valves for hot water service below 121 degrees C (250 Degrees F):

a. Bodies for valves 40 mm(1 1/2 inches) and smaller shall be brass or bronze with threaded or union ends. Bodies for valves larger than 50 mm (2 inches) shall have flanged-end connections. Water valves shall be sized for a 21 kPa (3 psi) differential through the valve at rated flow, except as indicated otherwise. Select valve flow coefficient (Cv) for an actual pressure drop not less than 50 percent or greater than 125 percent of the design pressure drop at design flow.



- b. Internal trim, including seats, seat rings, modulation plugs, and springs, of valves controlling water hotter than 99 degrees C (210 degrees F) shall be Type 316 stainless steel.
- c. Internal trim for valves controlling water 99 degrees C (210 degrees F) or less shall be brass or bronze.
- d. Non-metallic parts of hot water control valves shall be suitable for a minimum continuous operating temperature of 121 degrees C or 28 degrees C (250 degrees F or 50 degrees F) above the system design temperature, whichever is higher.
- e. Valves 100 mm (4 inches) and larger shall be butterfly valves.

### 2.3.3 Actuator

#### 2.3.3.1 Electric Actuators

Provide direct drive electric actuators for all control applications. When operated at rated voltage, each actuator shall be capable of delivering torque required for continuous uniform motion and shall have end switch to limit travel, or shall withstand continuous stalling without damage. Actuators shall function properly with range of 85 to 110 percent of line voltage. Provide gears of steel or copper alloy. Fiber or reinforced nylon gears may be used for torque less than 1.8 Newton meters (16 inch pounds). Provide hardened steel running shafts in sleeve bearing of copper alloy, hardened steel, nylon, or ball bearing. Provide two-position actuators of the single direction, spring return, or reversing type. Provide proportioning actuators capable of stopping at all points in the cycle and starting in either direction, from any point. Provide reversing and proportioning actuators with limit switches to limit travel in either direction unless operator is stall type. Actuators shall have a simple switch for reversing direction, and a button to disengage clutch for manual adjustments. Provide reversible shaded pole, split capacitor, synchronous, or stepper type electric motors.

#### 2.3.3.2 Pneumatic Actuators

Provide piston or diaphragm type actuator with full range or split range springs to provide required sequence specified and fail safe operation.

### 2.3.4 Output Signal Conversion

#### 2.3.4.1 Electronic to Pneumatic Transducer

Electronic to pneumatic transducer shall convert 4 to 20 mA or 0 to 10 VDC digital controller output signal to a proportional 0 to 20 psig pressure signal (operator scaleable). Accuracy shall be 1.0 percent or better. Linearity shall be 0.1 percent. Transducer shall have feedback circuit that converts pneumatic signal to a proportional 4 to 20 mA or 0 to 10 VDC signal.

#### 2.3.4.2 Pneumatic to Electronic Pressure Transducer

Pneumatic to electronic transducer shall convert 0 to 20 psig signal to a proportional 4 to 20 mA or 0 to 10 VDC signal (operator scaleable). Supply voltage shall be 24 VDC. Accuracy shall be 1.0 percent or better. Linearity shall be 0.1 percent.

### 2.3.5 Output Switches

#### 2.3.5.1 Control Relays

Shall be double pole, double throw (DPDT), UL listed, with contacts rated to the application, indicator light, and dust proof enclosure. Light indicator is lit when coil is energized and is off when coil is not energized. Relays shall be socket type, plug into a fixed base, and replaceable without need of tools or removing wiring. Encapsulated "PAM" type relays are permissible for terminal control applications.

#### 2.3.5.2 Solenoid Air Valves

Each valve shall have three port operation: common, normally open, and normally closed. Internal parts shall be brass, bronze, or stainless steel. Valves shall be rated at 344 kPa (50 psig) minimum when used in a control system operating at 172 kPa (25 psig) or less, or 1034 kPa (150 psig) when used in a control system operating in the range 172 to 689 kPa (25 to 100 psig).

## 2.4 ELECTRICAL POWER AND DISTRIBUTION

For control power provide a new, dedicated source 120 volts or less, 60 Hz, three wire (black, white, and green). Run green ground wire to panel ground; conduit grounds are not sufficient.

### 2.4.1 Transformers

Transformers shall conform to UL 506. Power digital controllers and terminal control units (TCU's) from dedicated circuit breakers with surge protection specified. Transformers for digital controllers serving terminal equipment on lower level LANs may be grouped to have specified surge protection sized for the number of controllers on a single transformer. Provide a fuse on the secondary side of the transformer.

### 2.4.2 Surge Protection

Surge and transient protection consist of devices installed externally to digital controllers.

#### 2.4.2.1 Power Line Surge Protection

Surge suppressors external to digital controller, shall be installed on all incoming AC power. Surge suppressor shall be rated by UL 1449, have a fault indicating light, and have clamping voltage ratings below the following levels:

- a. Unit is a transient voltage surge suppressor 120 VAC/1 phase/2 wire plus ground, hard wire individual equipment protector.
- b. Unit must react within 5 nanoseconds and automatically reset.
- c. Voltage protection threshold, line to neutral, starts at no more than 211 volts peak on the 120 VAC line.
- d. The transient voltage surge suppressor must have an independent secondary stage equal to or greater than the primary stage joule rating.
- e. The primary suppression system components must be pure Silicon Avalanche Diodes.
- f. Silicon Avalanche Diodes or Metal Oxide Varistors are acceptable in the independent secondary suppression system.

- g. The Transient Suppression System shall incorporate an indication light which denotes whether the primary and/or secondary transient protection components is/are functioning.
- h. All system functions of the Transient Suppression System must be individually fused and not short circuit the AC power line at any time.
- i. The Transient Suppression System shall incorporate an EMI/RFI noise filter with a minimum attenuation of 13 dB at 10 kHz to 300 MHz.
- j. The system must comply with IEEE C62.41, Class "B" requirements and be tested according to IEEE C62.45.
- k. The system shall operate at -20 to +50 degrees C (-4 to 122 degrees F).

#### 2.4.2.2 Telephone and Communication Line Surge Protection

Provide transient surge protection to protect the DDC controllers and LAN related devices from surges that occur on the phone lines (modem or direct connect) and on inter-unit LAN communications. Devices shall be UL listed.

- a. The surge protection shall be a rugged package with continuous, non-interrupting protection and not use crowbar technology. Instant automatic reset after safely eliminating transient surges, induced lightning, and other forms of transient over voltages.
- b. Unit must react within 5 nanoseconds using only solid-state silicone avalanche technology.
- c. Unit shall be installed at the proper distance as recommended by the manufacturer.

#### 2.4.2.3 Controller Input/Output Protection

Controller input/output points shall surge protection with optical isolation, metal oxide varistors (MOV), or silicon avalanche devices. Fuses are not permitted for surge protection.

#### 2.4.3 Wiring

Provide complete electric wiring for DDC System, including wiring to transformer primaries. Control circuit wiring shall not run in the same conduit as power wiring over 100 volts. Circuits operating at more than 100 Volts shall be in accordance with Section 16415 ELECTRICAL WORK, INTERIOR. Circuits operating at 100 Volts or less shall be defined as low voltage and shall be run in rigid or flexible conduit, metallic tubing, metal raceways or wire trays, armored cable, or multi-conductor cable. Provide circuit and wiring protection as required by NFPA 70. Aluminum-sheathed cable or aluminum conduit may be used but shall not be buried in concrete. Use conduit or plenum-rated cable in HVAC plenums. HVAC plenums include the space between a drop ceiling and the architectural ceiling, within walls, and within ductwork. Protect exposed wiring from abuse and damage.

##### 2.4.3.1 AC Control Wiring

- a. Control wiring for 24 V circuits shall be insulated copper 18 AWG minimum and rated for 300 VAC service.
- b. Wiring for 120 V shall be 14 AWG minimum and rated for 600 V service.

#### 2.4.3.2 Analog Signal Wiring

Analog signal wiring shall be 18 AWG single or multiple twisted pair. Each cable shall be 100 percent shielded, and have 20 AWG drain wire. Each wire shall have insulation rated to 300 V ac. Cables shall have an overall aluminum-polyester or tinned-copper (cable-shield tape). Install analog signal wiring in conduit separate from AC power circuits.

### 2.5 FIRE PROTECTION DEVICES

Provide smoke detectors in return and supply air ducts on downstream side of filters in accordance with NFPA 90A, except as otherwise indicated. Provide UL listed or FM approved detectors for duct installation.

#### 2.5.1 Smoke Detectors

Provide in systems having air handling capacity over 944 l/s (2,000 cfm) in accordance with NFPA 90A. Design for detection of abnormal smoke densities by the ionization or photoelectric principle, responsive to both invisible and visible particles of combustion, and not susceptible to operation by changes to relative humidity. Provide UL listed or FM approved detectors for duct installation. Provide duct detectors with an approved duct housing, mounted exterior to duct, and with perforated sampling tubes extending across width of duct. Provide 115 V ac power supply unit integral with duct housing. Duct smoke detectors shall conform to the requirements of UL 268A. Duct smoke detectors shall have perforated sampling tubes extended into the air duct. Detector circuitry shall be mounted in a metallic enclosure exterior to the duct. Detectors shall have manual reset. Detectors shall be rated for air velocities that include air flows between 2.5 and 20 m/s. 500 and 4000 fpm. Detectors shall be powered from the HVAC control panel. Detectors shall have two sets of normally open alarm contacts and two sets of normally closed alarm contacts. Detectors shall be connected to the building fire alarm panel for alarm initiation. A remote annunciation lamp and accessible remote reset switch shall be provided for duct detectors that are mounted eight feet or more above the finished floor and for detectors that are not readily visible. Remote lamps and switches as well as the affected fan units shall be properly identified in etched rigid plastic placards. Detectors shall have test port or test switch. Provide each detector with a visible indicator lamp that lights when detector is activated. Activation of duct detector shall cause shutdown of associated air handling unit and closing of dampers and shall sound an alarm bell, minimum 6 inch diameter in a normally occupied area located as directed. Provide a separate bell for each air handling unit, with an engraved plastic or metal label indicating which unit each bell annunciates.

### 2.6 INDICATORS

#### 2.6.1 Thermometers

#### 2.6.2 Pressure Gages

a. Provide pressure gages for all pneumatic outputs. Select gage range so normal pressures are approximately equal to the midpoint readings on the scale, unless otherwise specified. Accuracy shall be plus or minus 2 percent of the range. Gages shall conform to ANSI/ASME B40.1.

b. Gages indicating pneumatic outputs shall have 2 inch diameter faces. Scale shall be 0 to 207 kPa (0 to 30 psi), with 7 kPa (1 psi) graduations.

c. Gages for low differential pressure measurements shall be 4 1/2 inch (nominal) size with two sets of pressure taps, and shall have a diaphragm actuated pointer, white dial with black figures, and pointer zero adjustment. Gage shall have ranges and graduations as

appropriate for the application, or as shown. Accuracy shall be plus or minus 2 percent of scale range.

## 2.7 PNEUMATIC POWER SUPPLY AND TUBING

### 2.7.1 Air Compressors

Provide tank mounted, duplex, electric motor driven, oil type, air cooled, reciprocating type air compressor including motor, controller, pressure switch, belt guard, pressure relief valve, and automatic moisture drain valve. Piston speed shall not exceed 137 meters/min (450 fpm). Set relief valve for 69 to 172 kPa (10 to 25 psig) above the control switch cut-off pressure. Pressure switch shall start compressor at 482 kPa (70 psig) and stop compressor at 620 kPa (90 psig). Size each compressor to run not more than 33 percent of the time with full system control load. Compressor shall have maintaining type starter for automatic restart after power failure. Provide duplex air compressors with electric alternator switch assembly. Motors 0.5 hp and larger shall be three-phase, 208 or 460-volt, 60 Hz.

### 2.7.2 Compressed Air Tank

Provide steel tank constructed and labeled in accordance with ASME BPVC SEC VIII for a minimum of 1378 kPa (200 psig) working pressure.

### 2.7.3 Intake Air Filter and Silencer

Provide dry-type combination intake air filter and silencer with baked enamel steel housing. Filter shall be 99 percent efficient at 10 micron rating.

### 2.7.4 Refrigerated Air Dryer

a. Provide a refrigerant dryer sized for continuous operation to reduce the compressed air dew point temperature, at 138 kPa (20 psig) output pressure, to 30 degrees F with average tank pressure of 551 kPa (80 psig) and ambient air temperature between 12.7 and 35 degrees C (55 and 95 degrees F). Provide dryer with an automatic condensate drain trap with a manual override feature. Provide refrigerant gages for suction lines.

b. Connect dryer in the high pressure piping between tank and pressure -reducing valve.

### 2.7.5 Compressed Air Discharge Filter

a. Provide dry type filter, 99 percent efficient in removing oil and solid particles at 0.03 micron rating, with baked enamel steel housing and manual drain valve. Provide visual indicator to show when oil filter element should be changed.

b. Provide disposable filter directly before each control module with pneumatic outputs. Disposable filter shall eliminate 99.99 percent of all liquid or solid contaminants 0.1 micron or larger. Provide filter with easy to remove fittings.

### 2.7.6 Air Pressure-Reducing Station

Provide pressure-reducing valve (PRV) with field adjustable range of 0 to 344 kPa (0 to 50 psig) discharge pressure, with inlet pressure of 483 to 620 kPa (70 to 90 psig). Provide factory-set pressure relief valve to relieve overpressure downstream of PRV exceeding 172 kPa (25 psig). Provide inlet pressure gage with range of 0 to 689 kPa (0 to 100 psig) and outlet pressure gage with range of 0 to

207 kPa (0 to 30 psig). For two pressure systems, provide an additional PRV and outlet pressure gage.

## 2.7.7 Pneumatic Tubing

### 2.7.7.1 Copper Tubing

Provide ASTM B 75 or ASTM B 88M (ASTM B 88) rated tubing. Tubing 9.52 mm (0.375 inch) outside diameter and larger shall have minimum wall thickness equal to ASTM B 88M (ASTM B 88), Type M. Tubing less than 9.52 (0.375 inch) outside diameter shall have minimum wall thickness of 0.635 mm (0.025 inch). Concealed tubing shall be hard or soft copper; multiple tubing shall be racked or bundled. Exposed tubing shall be hard copper; rack multiple tubing. Tubing for working pressures greater than 207 kPa (30 psig) shall be hard copper. Bundled tubing shall have each tube numbered each 1.82 meter (six feet) minimum. Racked and individual tubes shall be permanently identified at each end. Fittings shall be solder type ANSI B16.18 or ASME/ANSI B16.22, using ASTM B 32, 95-5 tin-antimony solder, or compression type ASME/ANSI B16.26.

### 2.7.7.2 Polyethylene Tubing

Provide flame-resistant, multiple polyethylene tubing in flame-resistant protective sheath, or unsheathed polyethylene tubing in rigid metal, intermediate metal, or electrical metallic tubing conduit for areas where tubing is exposed. Single, unsheathed, flame-resistant polyethylene tubing may be used where concealed in walls or above ceilings and within control panels. Provide polyethylene tubing only for working pressures of 207 kPa (30 psig) or less. Number each tube in sheathing each two feet minimum. Permanently identify unsheathed tubing at each end. Fittings shall be compression or barbed push-on type. Extruded seamless polyethylene tubing shall conform to the following:

- a. Minimum Burst Pressure Requirements: 689 kPa at 23.8 degrees C (100 psig at 75 degrees F) to 172 kPa at 65.5 degrees C (25 psig at 150 degrees F);
- b. Stress Crack Resistance: ASTM D 1693, 200 hours minimum;
- c. Tensile Strength (Minimum): ASTM D 638, 7584 kPa (1100 psi);
- d. Flow Rate (Average): ASTM D 1238, 0.30 decigram per minute; and
- e. Density (Average): ASTM D 792, 920 kg/m<sup>3</sup>.

## 2.8 VARIABLE FREQUENCY 3 PHASE MOTOR DRIVES

The variable frequency drive (VFD) shall convert 208 or 460 volt (+/- 10%), three phase, 60 hertz (+/- 2Hz), utility grade power to adjustable voltage/frequency, three phase, AC power for stepless motor control from 5% to 105% of base speed.

### 2.8.1 Description

The variable frequency drive (VFD) shall produce an adjustable AC voltage/ frequency output for complete motor speed control. The VFD must meet all of the following criteria.

- a. The VFD shall use sinecoded PWM technology. The sinecoded PWM calculations are performed by the VFD microprocessor.
- b. The VFD shall use IGBT transistors for the inverter's three phase output.

- c. The VFD shall use a three phase diode bridge converter to charge the VFD constant voltage capacitor buss.
- d. The VFD shall have the ability for control by either a remote 4-20 mA or 0 to 10 VDC control signal or from a local control panel located on the VFD itself.
- e. The VFD shall use microprocessor technology for VFD control. The VFD shall be programmable with a permanently mounted keypad included with each VFD.
- f. The VFD shall be fully self diagnostic. No external programmers, analyzers, interrogators, or diagnostic boards, shall be needed to annunciate VFD faults or drive internal status.

#### 2.8.2 Code Standards

VFD shall be UL listed as delivered to the end user. The VFD shall meet current National Electrical Code.

#### 2.8.3 VFD Quality Assurance

To ensure quality, each and every VFD shall be subject to a series of in-plant quality controlled inspections before approval for shipment from the manufacture's facilities.

- a. All components shall be tested prior to assembly and the complete unit shall be tested under full load conditions to ensure maximum product reliability.
- b. The VFDs shall be the current standard production unit with at least 10 identical units already in the field.
- c. Engineering support shall be available from the factory of the VFD. Phone support shall be free of charge to the end user for the life of the equipment. Factory support shall be available in the English language.

#### 2.8.4 VFD Service

The VFD shall be supplied with:

- a. 24 month parts and labor warranty. The warranty shall start when the system is accepted by the end user or 30 months from date of shipment.
- b. Installation, operation, and troubleshooting guide(s).
- c. A district service support group shall provide the following additional services:
  - (1) Factory trained personal on-site for start-up for up to one working day at no additional cost. Personnel shall be competent in operation and repair of the particular model of VFD that is installed.
  - (2) On-site training of customer personnel in basic installation, troubleshooting, and operation of VFDs at no additional cost. This training shall be conducted for up to 6 personnel at the installation site for a minimum of 4 hours.

#### 2.8.5 Basic VFD Features

The VFD shall have the following basic features with no more than three separate internal electronic boards.

- a. VFD mounted operator control keypad capable of:
  - (1) Remote/Local operator selection with password access.
  - (2) Run/Stop and manual speed commands.
  - (3) All programming functions.
  - (4) Scrolling through all display functions.
- b. Digital display capable of indicating:
  - (1) VFD status.
  - (2) Frequency.
  - (3) RPM of motor.
  - (4) Phase current.
  - (5) Fault diagnostics in descriptive text.
  - (6) All programmed parameters.
- c. Standard PI loop controller with input terminal for controlled variable and parameter settings made while inverter running.
- d. User interface terminals for end-user remote control of VFD speed, speed feedback, and isolated form C SPDT relay energized on drive fault condition.
- e. An isolated form C SPDT auxiliary relay energized on run command.
- f. The VFD shall have a metal NEMA 1 enclosure.
- g. The VFD shall have an adjustable carrier frequency with 16 KHz minimum upper limit.
- h. The VFD shall have a built in or external line reactor with 3% minimum impedance to protect DC buss capacitors and rectifier section diodes.

#### 2.8.6 Programmable Parameters

The VFD shall include the following operator programmable parameters:

- a. Upper limit frequency.
- b. Lower limit frequency.
- c. Acceleration rate.



- d. Deceleration rate.
- e. Variable torque volts per Hertz curve.
- f. Starting voltage level.
- g. Starting frequency level.
- h. Display speed scaling.
- i. Enable/disable auto-restart feature.
- j. Enable/disable softstall feature.
- k. Motor overload level.
- l. Motor stall level.
- m. Jump frequency and hysteresis band.
- n. PWM carrier frequency.

#### 2.8.7 Protective Circuits and Features

- a. An electronic adjustable inverse time current limit with consideration for additional heating of the motor at frequencies below 45Hz, for the protection of the motor.
- b. An electronic adjustable soft stall feature, allowing the VFD to lower the frequency to a point where the motor will run at FLA when an overload condition exists at the requested frequency. The VFD will automatically return to the requested frequency when load condition permit.
- c. The VFD will have a separate electronic stall at 110% VFD rated current and a separate hardware trip at 190% current.
- d. The VFD shall have ground fault protection that protects output cables and motor from grounds during both starting and continuous running conditions.
- e. The VFD shall have the ability to restart after the following faults:
  - (1) Overcurrent (drive or motor).
  - (2) Power outage.
  - (3) Phase loss.
  - (4) Overvoltage/Undervoltage.
- e. The VFD shall restart into a rotating load without tripping or damaging the VFD or the motor.
- f. The VFD shall keep a log of a minimum of four previous fault conditions, indicating type and time of occurrence in descriptive text.

- g. The VFD shall be able to sustain 110% rated current for 60 sec.
- h. The VFD shall respond to and record the following fault conditions:
  - (1) Over current (and have an indication if the over current was during acceleration, deceleration, or running).
  - (2) Overcurrent internal to the drive.
  - (3) Motor overload at start-up.
  - (4) Over voltage from the utility power.
  - (5) Motor running overload.
  - (6) Overvoltage during deceleration.
  - (7) VFD over heat.
  - (8) Load end ground fault.
  - (9) Abnormal parameters or data in VFD EEPROM.

#### 2.8.8 Operational Conditions

The VFD shall be designed and constructed to operate within the following service conditions.

- a. Ambient Temperature Range, -17.7 to 48.8 degrees C (0 to 120 deg. F).
- b. Non-condensing relative humidity to 90%.

#### 2.8.9 Available Options

Provide the following options:

- a. RFI/EMI filters
- b. RS232 or RS422/485 interface card with application software which can both control and monitor the VFD from a attached computer.
- c. A manual bypass circuit and switch integral or external to the drive to allow drive bypass drive and operate at 100% speed. Overload fuses and other protective hardware shall remain in the circuit during bypass.
- d. One set of spare parts per drive including: all replaceable circuit cards, power diode assemble, DC Buss capacitor, power output transistor assembly, all fuses, and all lights. Package parts individually for long term storage and clearly label contents.

## PART 3 EXECUTION

### 3.1 INSTALLATION

Perform installation under supervision of competent technicians regularly employed in the installation of DDC systems.

#### 3.1.1 Wiring Criteria

- a. Input/output identification: Permanently label each field wire, cable, or pneumatic tube at each end with unique descriptive identification.
- b. Rigid or flexible conduit shall be terminated at all sensors and output devices.
- c. Surge Protection: Install surge protection per manufacturer's specification.
- d. Grounding: Ground controllers and cabinets to a good earth ground. Ground controller to a ground in accordance with Section 16415 ELECTRICAL WORK, INTERIOR. Grounding of the green ac ground wire, at the breaker panel, alone is not adequate. Run metal conduit from controller panels to adequate building grounds. Ground sensor drain wire shields at controller end.
- e. Contractor is responsible for correcting all associated ground loop problems.
- d. Wiring in panel enclosures shall be run in covered wire track.

#### 3.1.2 Digital Controllers

- a. Do not divide control of a single mechanical system such as an air handling unit, boiler, chiller, or terminal equipment between two or more controllers. A single controller shall manage control functions for a single mechanical system. It is permissible, however, to manage more than one mechanical system with a single controller.
- b. Provide digital control cabinets that protect digital controller electronics from dust, at locations shown on the drawings.

#### 3.1.3 Temperature Sensors

Provide temperature sensors in locations to sense the appropriate condition. Provide sensor where they are easy to access and service without special tools. Calibrate sensors to accuracy specified. In no case will sensors designed for one application be installed for another application.

##### 3.1.3.1 Room Temperature Sensors

Provide on interior walls to sense average room temperature conditions. Avoid locations near heat sources or which may be covered by office furniture. Room temperature sensors should not be mounted on exterior walls when other locations are available. Mount center of sensor at 5 feet above finished floor.

##### 3.1.3.2 Duct Temperature Sensors

- a. Provide sensors in ductwork in general locations as indicated. Select specific sensor location within duct to accurately sense appropriate air temperatures. Do not locate

sensors in dead air spaces or positions obstructed by ducts or equipment. Install gaskets between the sensor housing and duct wall. Seal duct and insulation penetrations.

b. String duct averaging sensors between two rigid supports in a serpentine position to sense average conditions. Insulate temperature sensing elements from supports. Provide hinged duct access doors to install averaging sensors if needed.

c. Locate freeze protection sensors in appropriate locations to sense lowest temperatures, to avoid potential problems with air stratification.

#### 3.1.3.3 Immersion Temperature Sensors

Provide thermowells for sensors measuring temperatures in liquid applications or pressure vessels. Locate wells to sense continuous flow conditions. Do not install wells using extension couplings. Where piping diameters are smaller than the length of the wells, provide wells in piping at elbows to sense flow across entire area of well. Wells shall not restrict flow area to less than 70 percent of pipe area. Increase piping size as required to avoid restriction. Provide thermowells with thermal transmission material within the well.

#### 3.1.3.4 Outside Air Temperature Sensors

Provide outside air temperature sensor in weatherproof enclosure on north side of the building, away from exhaust hoods, air intakes and other areas that may affect temperature readings. Provide sunshields to from direct sunlight.

#### 3.1.4 Damper Actuators

Actuators shall not be mounted in the air stream.

#### 3.1.5 Thermometers

Provide thermometers at locations indicated. Mount thermometers to allow reading when standing on the floor.

#### 3.1.6 Pressure Sensors

##### 3.1.6.1 Differential Pressure

a. Duct Static Pressure Sensing: Locate duct static pressure tip approximately two-thirds of distance from supply fan to end of duct with the greatest pressure drop.

b. Pumping Proof with Differential Pressure Switches: Install high pressure side between pump discharge and check valve.

c. Steam Pressure Sensing: Install snubbers and isolation valves on steam pressure sensing applications.

#### 3.1.7 Pressure Gages

Pneumatic output lines shall have pressure gages mounted near the digital controllers.

### 3.1.8 Pneumatic Tubing

Run concealed tubing in finished areas, and run exposed tubing in unfinished areas such as mechanical equipment rooms. For tubing to be enclosed in concrete, provide rigid metal conduit or intermediate metal conduit. Provide tubing parallel and perpendicular to building walls throughout. Maximum spacing between tubing supports shall be 1.5 meters (5 feet). With the compressor turned off, test each tubing system pneumatically at 1.5 times the working pressure, with a maximum pressure drop of 7 kPa (1 psig). Correct leaks. Caulking of joints will not be permitted. Do not run tubing and electrical power conductors in the same conduit.

### 3.1.9 Control Drawings

- a. Post laminated copies of as-built control system drawings in each mechanical room.
- b. Provide 3 sets of as-built control drawings to the Contracting Officer.

## 3.2 TEST AND BALANCE SUPPORT

Controls contractor will coordinate with and provide full time on-site technical support to test and balance (TAB) personnel specified under Section 15990 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS or any other documents in the project specification. This support shall include:

- a. On-site operation of control systems for proper operating modes during all phases of balancing and testing.
- b. Control setpoint adjustments for proper balancing of all relevant mechanical systems, including VAV boxes.
- c. Setting all control loops with setpoints and adjustments determined by TAB personnel.

## 3.3 FIELD QUALITY CONTROL

### 3.3.1 General

- a. Demonstrate compliance of the heating, ventilating, and air conditioning control system with the contract documents. Furnish personnel, equipment, instrumentation, and supplies necessary to perform calibration and site testing. Ensure that test personnel are regularly employed in the testing and calibration of DDC systems.
- b. Testing will include the field tests and the performance verification tests. Field tests shall demonstrate proper calibration of input and output devices, and the operation of specific equipment. Performance verification test shall ensure proper execution of the sequence of operation and proper tuning of control loops.
- c. Obtain approval of the field test plan and performance verification test plan for each phase of testing before beginning that phase of testing. Give to the Contracting Officer written notification of planned testing at least 30 days prior to test. Notification shall be accompanied by the proposed test procedures. In no case will the Contractor be allowed to start testing without written Government approval of field test plan and performance verification test plan.
- d. Before scheduling the performance verification test, furnish field test documentation and written Certified Statement of Field Test Completion to the Contracting Officer for approval. The statement, certified by the DDC system provider, states that the installed system has

been calibrated, tested, and is ready for the performance verification test. Do not start the performance verification test prior to receiving written permission from the Government.

e. Tests are subject to oversight and approval by the Contracting Officer. The testing shall not be run during scheduled seasonal off-periods of heating and cooling systems.

### 3.3.2 Test Reporting for Field Testing and Performance Verification Tests

a. During and after completion of the Field Tests, and again after the Performance Verification Tests, identify, determine causes, replace, repair or calibrate equipment that fails to meet the specification, and submit a written report to the Government.

b. Document all tests with detailed test results. Explain in detail the nature of each failure and corrective action taken. Provide a written report containing test documentation after the Field Tests and again after the Performance Verification Tests. Convene a test review meeting at the job site to present the results to the Government. As part of this test review meeting, demonstrate by performing all portions of the field tests or performance verification test that each failure has been corrected. Based on the report and test review meeting, the Government will determine either the restart point or successful completion of testing. Do not retest until after receipt of written notification by the Government. At the conclusion of retest, assessment will be repeated.

### 3.3.3 Contractor's Field Tests

Field tests shall include the following:

#### 3.3.3.1 System Inspection

Observe the HVAC system in its shutdown condition. Check dampers and valves for proper normal positions. Document each position for the test report.

#### 3.3.3.2 Calibration Accuracy and Operation of Inputs Test

Verify correct calibration and operation of input instruments. For each sensor and transmitter, including those for temperature, pressure, humidity, and air quality, record the reading at the sensor or transmitter location using calibrated test equipment. On the same table, record the corresponding reading at the digital controller for the test report. The test equipment shall have been calibrated within one year of use. Test equipment calibration shall be traceable to the measurement standards of the National Institute of Standards and Technology.

#### 3.3.3.3 Actuator Range Adjustment Test

With the digital controller, apply a control signal to each actuator and verify that the actuator operates properly from its normal position to full range of stroke position. Record actual spring ranges and normal positions for all modulating control valves and dampers. Include documentation in the test report.

#### 3.3.3.4 Digital Controller Startup and Memory Test

Demonstrate that programming is not lost after a power failure, and digital controllers automatically resume proper control after a power failure.

#### 3.3.3.5 Surge Protection Test

Show that surge protection, meeting the requirements of this specification, has been installed on incoming power to the digital controllers and on communications lines.

#### 3.3.3.6 Application Software Operation Test

Test compliance of the application software for:

- a. Ability to communicate with the digital controllers, uploading and downloading of control programs
- b. Text editing program: Demonstrate the ability to edit the control program off line.
- c. Reporting of alarm conditions: Force alarms conditions for each alarm, and ensure that workstation receives alarms.
- d. Reporting trend and status reports: Demonstrate ability of software to receive and save trend and status reports.

#### 3.3.4 Performance Verification Tests

Conduct the performance verification tests to demonstrate control system maintains setpoints, control loops are tuned, and controllers are programmed for the correct sequence of operation. Conduct performance verification test during seven days of continuous HVAC and DDC systems operation and before final acceptance of work. Specifically the performance verification test shall demonstrate the following:

##### 3.3.4.1 Execution of Sequence of Operation

Demonstrate the HVAC system operates properly through the complete sequence of operation, for example seasonal, occupied/unoccupied, and warm-up. Demonstrate proper control system response for abnormal conditions by simulating these conditions. Demonstrate hardware interlocks and safeties work. Demonstrate the control system performs the correct sequence of control after a loss of power.

##### 3.3.4.2 Control Loop Stability and Accuracy

Furnish the Government graphed trends of control loops to demonstrate the control loop is stable and that setpoint is maintained. Control loop response shall respond to setpoint changes and stabilize in 3 minutes. Control loop trend data shall be real time and the time between data points shall not be greater than one minute. The contractor shall provide a printer, either the project printer or temporary, at the job site for printing graphed trends. The printer shall remain on the job site throughout Performance Verification Testing to allow printing trends.

#### 3.4 TRAINING

Submit a training course schedule, syllabus, and training materials 14 days prior to the start of training. Furnish a qualified instructor to conduct training courses for designated personnel in the maintenance and operation of the HVAC and DDC system. Orient training to the specific system being installed under this contract. Use operation and maintenance manual as the primary instructional aid in contractor provided activity personnel training. Base training on the Operations and Maintenance manuals and a DDC training manual. Manuals shall be delivered for each trainee with two additional sets delivered for archiving at the project site. Training manuals shall include an agenda, defined objectives and a detailed description of the subject matter for each lesson. Furnish audio-visual

equipment and all other training materials and supplies. A training day is defined as 8 hours of classroom or lab instruction, including two 15 minute breaks and excluding lunch time, Monday through Friday, during the daytime shift in effect at the training facility. For guidance, the Contractor should assume the attendees will have a high school education and are familiar with HVAC systems.

#### 3.4.1 DDC Training Phase I

The first class shall be taught for a period of 2 consecutive training days at least 2 weeks prior to the scheduled Performance Verification Test. The first course shall be taught in a government provided facility on base. Training shall be classroom, but have hands-on operation of similar digital controllers. A maximum of 8 personnel will attend this course. Upon completion of this course, each student, using appropriate documentation, should be able to perform elementary operations, with guidance, and describe the general hardware architecture and functionality of the system. This course shall include but not be limited to:

- a. Theory of operation
- b. Hardware architecture
- c. Operation of the system
- d. Operator commands
- e. Control sequence programming
- f. Data base entry
- g. Reports and logs
- h. Alarm reports
- i. Diagnostics

#### 3.4.2 DDC Training Phase II

The second course shall be taught in the field, using the operating equipment at the project sites for a total of 2 consecutive days. A maximum of 8 personnel will attend the course. The course shall consist of hands-on training under the constant monitoring of the instructor. Course content should duplicate DDC Training Phase I course as applied to the installed system. The instructor shall determine the level of the password to be issued to each student before each session. Upon completion of this course, students should be fully proficient in the operation of each system function.

END OF SECTION



## **APPENDIX B**

### **CONCEPTUAL DRAWINGS**

(See separately attached conceptual drawings.)

# INDEX OF DRAWINGS

## FY02 VEHICLE MAINTENANCE FACILITY FT. LEWIS, WA PN 54068 & 54113

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
1	G-1	Title and Area Maps		25 JAN 2002
2	G-2	Drawing Index		25 JAN 2002
3	GT-1	Exploration Logs		25 JAN 2002
4	GT-2	Exploration Logs		25 JAN 2002
5	GT-3	Exploration Logs		25 JAN 2002
6	GT-4	Exploration Logs		25 JAN 2002
7	GT-5	Exploration Logs		25 JAN 2002
8	GT-6	Exploration Logs		25 JAN 2002
9	GT-7	Exploration Logs		25 JAN 2002
10	GT-8	Exploration Logs		25 JAN 2002
11	GT-9	Exploration Logs		25 JAN 2002
12	GT-10	Exploration Logs		25 JAN 2002
13	GT-11	Locations of Explorations	<u>A</u>	<u>3 APR 2002</u>
14	C-1	Legend and Abbreviations		25 JAN 2002
15	C-2	General Site Plan		25 JAN 2002
16	C-3	Demolition Plan 1		25 JAN 2002
17	C-4	Demolition Plan 2		25 JAN 2002
18	C-5	Site Plan 1		25 JAN 2002
19	C-6	Site Plan 2		25 JAN 2002
20	C-7	Utility Plan 1		25 JAN 2002
21	C-8	Utility Plan 2		25 JAN 2002

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
22	A-1	General Design Criteria		25 JAN 2002
23	A-2	CSSC Floor Plan and Elevations	<u>A</u>	<u>3 APR 2002</u>
24	A-3	MARC Floor Plan and Elevations		25 JAN 2002
25	A-4	RSTA and IB Buildings Plan and Elevations		25 JAN 2002
26	A-5	DESB Plans and Elevations		25 JAN 2002
27	A-6	Partial Plans		25 JAN 2002
28	A-7	Maintenance Bay, Repair Bay and Circulation Bay Modules		25 JAN 2002
29	A-8	Miscellaneous Details		25 JAN 2002
30	A-9	Building Sections		25 JAN 2002
31	M-1	Mechanical Schedules		25 JAN 2002
32	M-2	HVAC Plan – Vehicle Bays		25 JAN 2002
33	M-3	HVAC Plan – Administrative Areas		25 JAN 2002
34	M-4	Mechanical Details I		25 JAN 2002
35	M-5	Mechanical Details II		25 JAN 2002
36	E-1	Legends	<u>A</u>	<u>3 APR 2002</u>
37	E-2	Electrical Site Plan I	<u>A</u>	<u>3 APR 2002</u>
38	E-3	Electrical Site Plan II	<u>A</u>	<u>3 APR 2002</u>
39	E-4	One Line Diagram	<u>A</u>	<u>3 APR 2002</u>
40	E-5	Electrical Site Lighting I	<u>A</u>	<u>3 APR 2002</u>
41	E-6	Electrical Site Lighting II	<u>A</u>	<u>3 APR 2002</u>
42	E-7	<del>Communications Site Plan I</del> NOT USED		<del>25 JAN 2002</del>
43	E-8	<del>Communications Site Plan II</del> NOT USED		<del>25 JAN 2002</del>
44	E-9	<del>Communications Site Plan III</del> NOT USED		<del>25 JAN 2002</del>
45	E-10	Detail I	<u>A</u>	<u>3 APR 2002</u>

SHEET NUMBER	PLATE NUMBER	TITLE	REVISION NUMBER	DATE
46	E-11	Detail II	<u>A</u>	<u>3 APR 2002</u>
47	E-12	Detail III	<u>A</u>	<u>3 APR 2002</u>

#### REVISIONS TO DRAWINGS BY NOTATION

Drawing, Sheet C-2: Delete propane line. Delete “Existing Propane Line” and “Point of Connection to Existing Line.”

Drawing, Sheet C-7: Delete propane line. Delete “Existing Propane Line” and “Point of Connection to Existing Line.”

Drawing, Sheet C-8: Show 200mm force main (FM) to extend from Plate C-7 matchline, to terminate at sanitary lift station, at the outlet of oil/water separator.

Drawing, Sheet A-8: In Detail at Eave, change Rigid Insulation to R-30, min.

Drawing, Sheet A-9: In CMU Wall Section, delete “(R-7)” from rigid insulation callout.

#### STANDARD DETAILS BOUND IN THE SPECIFICATIONS

DRAWING NUMBER	SHEET NUMBER	TITLE	DATE
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#### SECTION 01501 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

1 & 2	U.S. Air Force Project Construction Sign	84JUN20
1	Hard Hat Sign	10SEP90